CHEMICAL INDUSTRIES

VOLUME XXXV NUMBER 3

"Political Economy"

THE fall election should clarify the issues of the New Deal. That is the theory of our democracy. Unfortunately the practice, judging from the pronouncements of the Administration's spokesmen and the criticisms of their political opponents, is going to becloud the real issues. Unfortunately it is the personalities and the details of the program, rather than its fundamentals, which the politicians seize upon as the best vote-getting arguments. Doubtless, they are quite correct in this appraisal of popular appeal; but for this very reason those of us who have the responsibilities of leadership should the more carefully keep our eyes fixed on those real issues which the politicians of both parties do not discuss.

Admittedly the New Deal has two purposes. It is a deliberate double effort to restore prosperity and to control our economic activities for the common good so that the benefits of prosperity shall be equitably distributed and future depressions shall be eliminated.

It is proposed to restore prosperity by checking the deflation of values. Prosperity is to be made permanent by establishing control over production and prices. Both these means to the wholly praiseworthy ends sought are to be effected by legislation enforced through the agencies of the Federal Government.

Only by keeping clearly in mind these two major objectives and the two essential means employed to reach them, and never forgetting that the whole program rests upon a foundation of Congress-made and Bureau-administered law, can one fairly judge the Rooseveltian plan for restoration and reformation. So simplified, the problem becomes very much more comprehensible.

First, can prosperity be restored by raising wages and prices? If so, can wages and prices be raised by law, and again, is such economic legislation likely to accomplish permanent and favorable results?

Second, can prosperity be guaranteed by a centralized control over agricultural and industrial production and prices? If so, can that control be made by law complete enough to be effective, and can it be wisely and fairly administered by an elective form of Government?

Answer these questions carefully and conscientiously. You will find them very useful in judging both the deeds of the Administration and the criticisms of the Opposition.

An Example of Bureaucracy

After a public hearing, at which no opposition developed to the restoration of methanol as a denaturant, the Treasury Department, on August second, issued Service Release No. 2-43, restoring the old CDAI formula. Eight days later, Service Release No. 2-50 announced baldly that the Secretary of the Treasury would issue no such Decision. Mr. Morgenthau has since referred the entire matter back to Harold N. Graves, Assistant to the Commissioner of Internal Revenue, before whom the open methanol referendum took place, and who, inferentially at least, originally recommended the restoration of CDA1.

Technically and commercially, there can be marshalled scores of reasons why, for industrial purposes, methanol is an ideal denaturant. Every country in the world uses it for this purpose, and since the repeal of Prohibition there is no reason in the world why our solvent users should be deprived of this formula which, for economy, efficiency and effective use is most widely needed today.

We are sincerely sorry for Mr. Graves, who is in the extremely uncomfortable position of a responsible expert arbitrarily overridden by the higher-ups. But we hope that this very flagrant misuse of bureaucratic power to override the findings of an open referendum where, as so rarely happens, both producers and consumers were of one mind, will serve as a timely warning to the dangers of government by men rather than by law.

Our Individualistic Chemical Industry

It is indubitably a Government function to provide for the nation's defense. These provisions must be adequate for any emergency; but it is good sense that they be made as efficiently and as economically as possible. These are, in the language of the Declaration of Independence, "self-evident truths."

There is a casual comparison in Mr. Haynes' article in this issue between the Government-built-and-owned munitions plants at Muscle Shoals and the privately-built-and-operated potential munitions plants in the Kanawha Valley. This is much more than "a horrible example for the unbelievers in rugged individualism." It is a practical lesson in applied Government-ownership in a legitimate field of Government operation taught by that thorough but often disagreeable teacher, Experience.

At Muscle Shoals are two nitrogen plants, built during the war at war prices. The one to synthesize ammonia was built before we had any large scale operation of this tricky process, and there were so many ifs and maybes in the plans that it never worked. No effort has ever been made to make it work. The second plant was built to make cyanamid. It could be operated today. But when the T. V. A. put a nitrogen expert in charge he ignores the ammonia plant completely and he sets to work in the cyanamid plant to make superphosphate!

When the du Pont ammonia plant was first built it did not operate up to expectations, but it was made to work at capacities that today far exceed the original specifications. A business administration has made a commercial success of a process the Government has left to rot. Moreover they are producing not only ammonia, but methanol also, and if the munitions need arose the alcohol plant could be turned to nitrogen production within a week.

Hardly less vital than nitrogen in munition needs are solvents and mustard gas, and close by this ammonia plant is the Carbide and Carbon plant. This not only produces butanol and acetone, favorite airplane dope materials, but also a score of new solvents, and ethylene glycol, so that within three weeks it can be turned into the largest mustard gas factory in the world.

The combined capital investment in these two plants is greater than the cost of the two Muscle Shoals plants. But not one penny of it has come from the taxpayers' pockets. Even during the depression both have run profitably to their stockholders, while Muscle Shoals has been piling up maintenance and interest charges and depreciating rapidly through obsolescence. At Muscle Shoals the Government is spending goodly sums to make superphosphate in a corner of the vast cyanamid plant by two processes long in commercial operation which have never proved cheap enough for use in fertilizer making. Both the privately owned plants are working at capacity, employing over 3000 people year in and year out, and both have recently announced new products to be marketed this fall. The Carbide and Carbon plant has given us an entirely new, distinctly American chemical industry of synthetic products from natural gas. The du Pont plant has been a real factor in roughly quadrupling the output and halving the price of two such important chemicals as pure methanol and anhydrous ammonia. Muscle Shoals contribution to chemical progress has been fifteen years of unfulfilled promises of cheaper fertilizers.

The Birthplace of Southern Chemical Industry

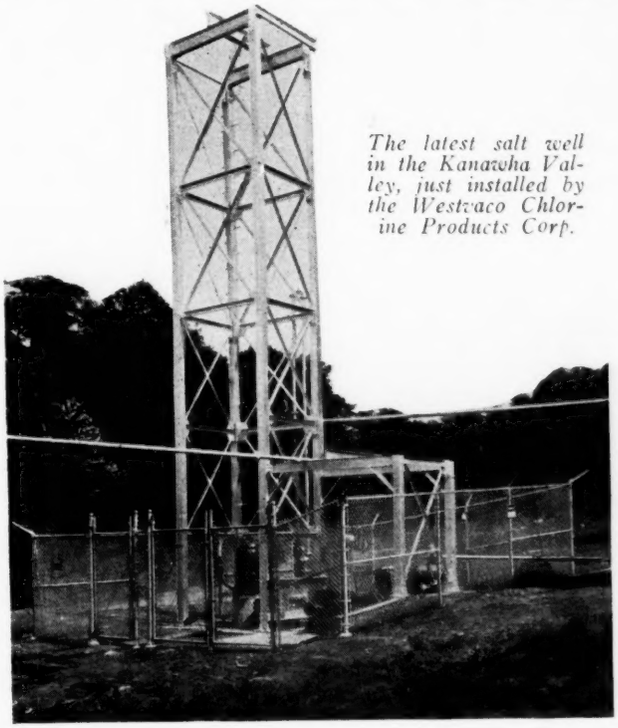
By Williams Haynes

ONE frosty October morning in 1771 three young but well-toughened backwoodsmen, Simon Kenton, destined to become one of Kentucky's most famous Indian fighters, with John Yager and George Strader, beached their canoe by the grassy plain where the Elk River flows into the Kanawha. From the big bluegrass meadow the buffalo had worn a trail "as wide as a wagon road" up the valley to a salt spring just above Campbell's Creek. The youthful explorers had been nosing up the tributaries of the Ohio all summer and warned by a couple of snow flurries were now seeking good winter quarters. Here, sheltered by the hills, with good water, and abundant game guaranteed by the salt lick, they built a lean-to.

On that campsite the city of Charleston, West Virginia, now stands. That buffalo track became in time the famous Midland Trail from the Valley of the Shenandoah to the Ohio, later the stage coach route from Kentucky and Tennessee to Washington, and now the concrete-paved U. S. Highway 60. The salt lick above Campbell's Creek was the sign and portent of the great chemical plants that lie scattered the length of the beautiful valley where Simon Kenton and his comrades hunted buffalo.

For salt was the beginning of the Kanawha chemical enterprises, and the salt operations go back to days just after the Revolutionary War. In 1797, when George Washington was President, Elisha Brooks built the first salt works in the Kanawha Valley, at Malden near Campbell's Creek, where he rented the salt rights from John Dickinson. His plant consisted of twenty-four small iron kettles for evaporating brine.

The first bromine works in America at the J. Q. Dickinson plant. In the heading, and still in active use, the first receiving vat; both still in operation.



The latest salt well in the Kanawha Valley, just installed by the Westvaco Chlorine Products Corp.

This was the beginning of an industry, the first on what was then the frontier. He produced about 150 pounds a day, then selling for 10 cents a pound. Since the crude methods of that day could not separate the iron from the salt, which accordingly had a reddish tinge, this resourceful pioneer made a virtue of neces-

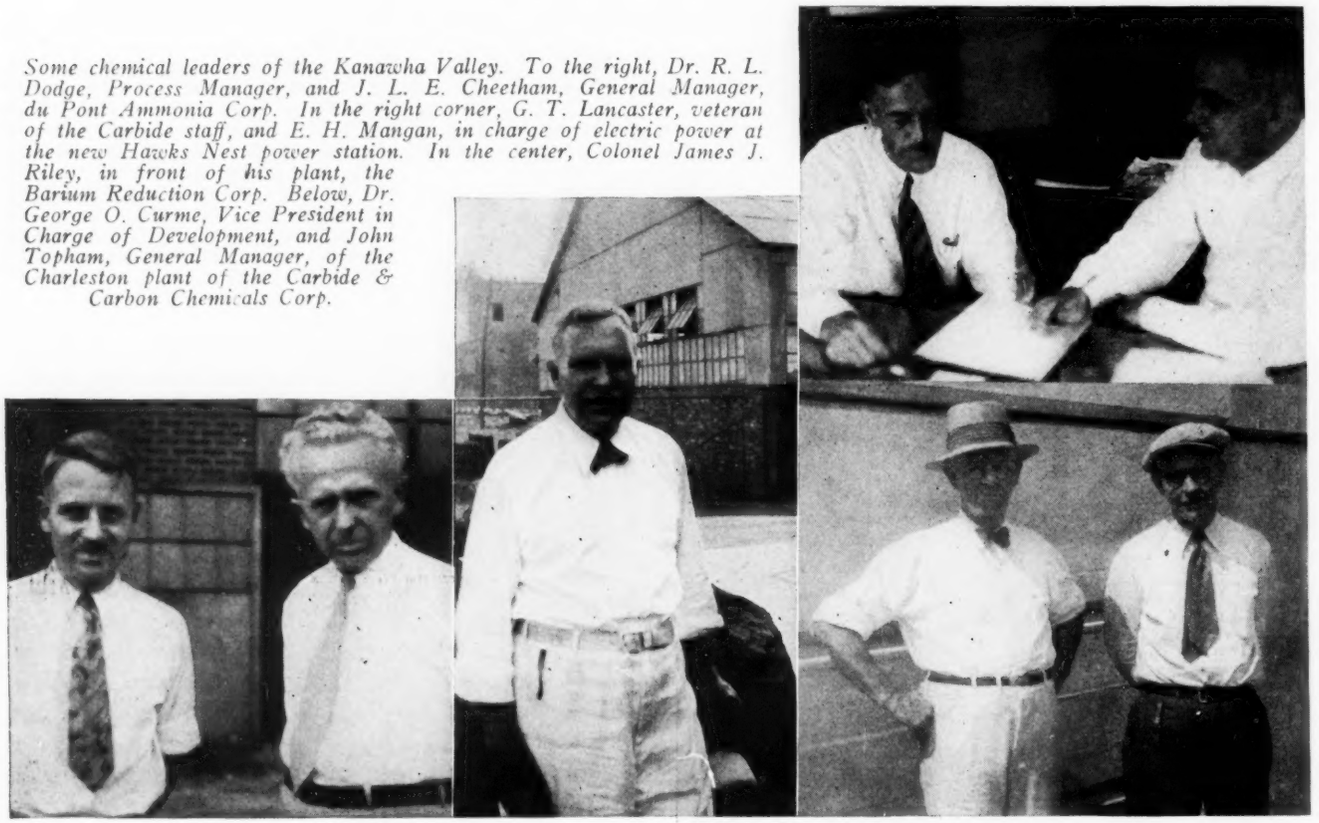
sity and branded his product "that strong red Kanawha salt."

The Kanawha salt industry flourished exceedingly, and Mr. Brooks soon had competitors. John Dickinson went into the business himself in 1832, and at the peak there were over fifty "salt furnaces" in the valley. But their brine (NaCl, 9%; Mg & $CaCl_2$, 3%; Br, .03%) came into competition with the stronger brines of Michigan shortly after the Civil War. One by one they closed up till today a sole survivor carries on.

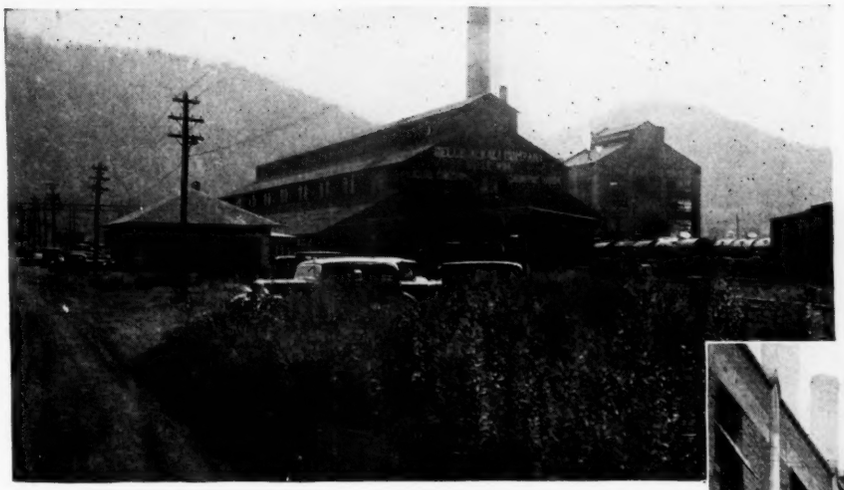
That strong red Kanawha salt was off the market before modern methods of purifying were perfected, and one cannot be quite certain whether Charles C. Dickinson, who owns the J. Q. Dickinson Salt Company, continues today to operate the old methods in old ways for sentimental or practical reasons. I suspect both. There is a story told that John Dickinson, the founder, on his deathbed admonished his son John Q. to "keep the fires under the salt pans burning." Likely, Charles C. had from his father the solemn injunction of his grandfather. Save for the big flood of 1860, which forced a shutdown, the plant has been operating day and night. Today they are still pumping brine with suction pumps through pipes of hollowed-out gum logs and storing it in a great wooden vat built of gigantic timbers at the time of the flood repairs. Negroes with homemade wooden hoes and shovels are still scraping salt out of the long rows of open pans and loading it in great, clumsy wooden wheelbarrows. But the Dickinson salt is snow white, and instead of being loaded in homemade "flatboats" and ferried to market at the cities on the Ohio and Mississippi Rivers, it is bagged and barrelled and sold largely to the farmers in Kentucky and Tennessee, who particularly like its large, pure crystals for salting down meat.

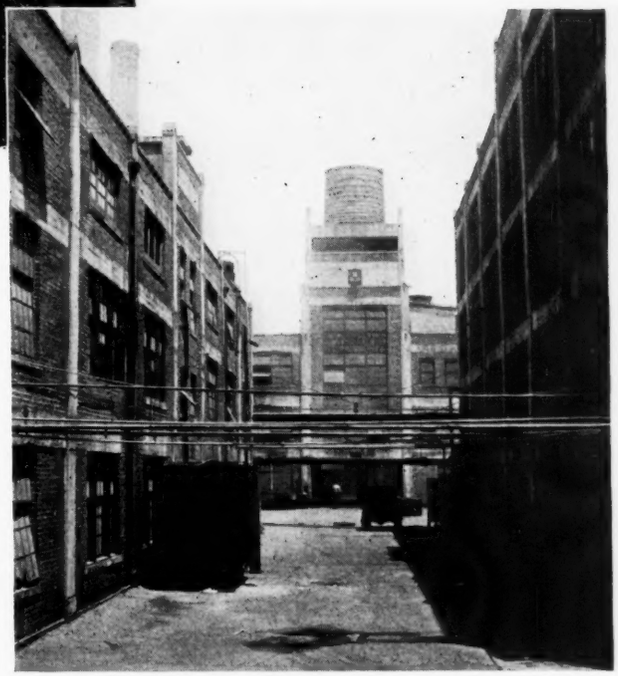
Since 1890 the plant has produced bromine, the very oldest operation of the kind in the country, and turning it into the sodium, potassium, and ammonium salts, while for thirty-five years it has separated from the bittern a mixture of calcium and magnesium chlorides. All these chemical operations are carried on in the simplest apparatus and by methods that appear antediluvian compared with the new bromine-from-seawater plant or the new salt-from-brine enterprise in Oklahoma, yet the products are pure and the operation economical. Mr. Dickinson can rightly boast that his plant has run over a century with but one shut-down, and that caused by a flood; and I strongly suspect that this business has never had an annual statement in the red.

Back in the old heydays of this Kanawha salt industry, when they were painfully digging and drilling brine wells by hand, they feared to strike oil. It was an unmitigated nuisance, which they tubed away as best they could and let flow down into the river, so that for years the Kanawha was appropriately nicknamed "Old Greasy." Back in 1841 someone drilling for brine struck gas, and it was soon discovered that this could be piped to the furnaces for fuel. Moreover, the gas would lift the brine a thousand feet, force it a mile through pipes to the salt pans, boil it, and even light the plant. It was this combination of abundant salt and cheap fuel that started the Kanawha Valley on its chemical career.



Some chemical leaders of the Kanawha Valley. To the right, Dr. R. L. Dodge, Process Manager, and J. L. E. Cheetham, General Manager, du Pont Ammonia Corp. In the right corner, G. T. Lancaster, veteran of the Carbide staff, and E. H. Mangan, in charge of electric power at the new Hawks Nest power station. In the center, Colonel James J. Riley, in front of his plant, the Barium Reduction Corp. Below, Dr. George O. Curme, Vice President in Charge of Development, and John Topham, General Manager, of the Charleston plant of the Carbide & Carbon Chemicals Corp.



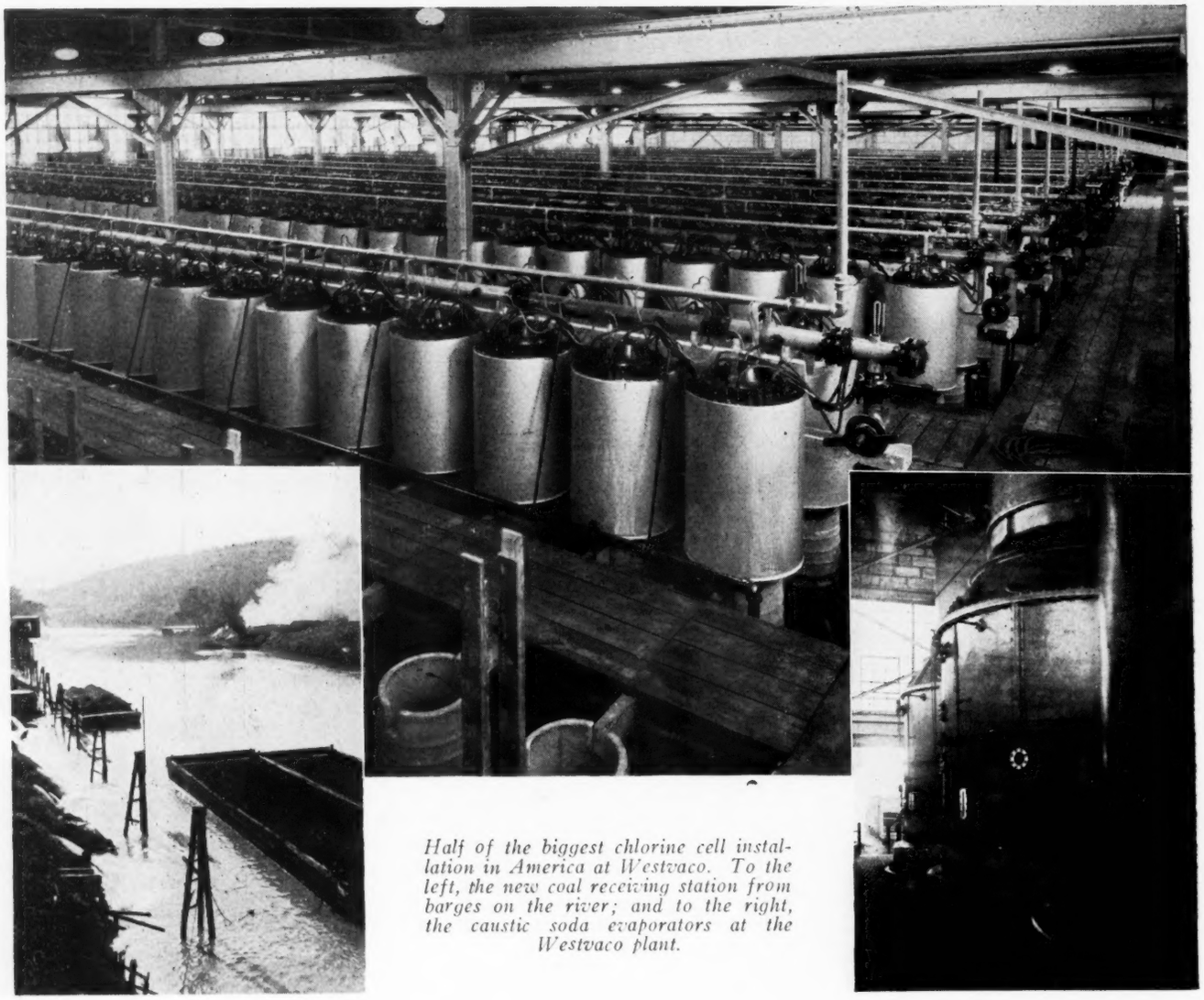


To the left, D. A. Stubblefield's, Belle Alkali plant, and below, "Main Street" of the E. C. Klipstein plant of the Calco Chemical Company.

The boosters once christened Charleston the "COG" city from its coal, oil and gas. To appreciate all its chemical resources you should really hear S. P. Puffer, who is truly the Chamber of Commerce. He will tell you that their coal is the best chemical-coking coal in the world (which it is), and that while in the famous Ruhr they dig down deep for it, in West Virginia they scrape it out of the mountainsides and roll it downhill to the plant (as is being done in swinging buckets from Carbide and Carbon's own mines to their new steam power plant at Alloy). Coal means carbon and coal-tar with all its crudes and intermediates and by-products (du Pont at Belle are just now installing new benzol recovery plant). Petroleum and natural gas are also either fuel or chemical raw materials. From salt there is chlorine, bromine, sodium, and magnesium, and there is plenty of limestone and silicon. I would not steal Mr. Puffer's thunder; but these rich resources are facts, and they are the facts that underlie the chemical economics of the region.

Back in the booming war year of 1916 Dr. Lucien C. Warner and E. C. Klipstein, having plants almost adjoining near Carteret, N. J., and both being interested in chlorine, came to the Kanawha brine with the Warner-Klipstein Co. to operate the cell invented by a third partner, H. R. Nelson. Warner was making carbon tetrachloride and needed caustic for his tri-sodium phosphate. Klipstein was not only making sulfur black, requiring caustic, but was also beginning to make anthraquinone, requiring aluminum chloride, and he also sold chlorine direct. Excess caustic found a ready market in the Cincinnati soap works. Shortly before, the Englishman, Hugh Rollin, transplanted from Newcastle-on-Tyne the English process for the production of the double oxides of barium, and located in South Charleston where he could economically bring ore from Tennessee and Virginia to cheap fuel. Uncle Sam in the meanwhile had built a chemical city at Nitro to make explosives. Carbide and Carbon, working with hydrocarbon gases, came where they could get casinghead gas, cheap power, and large supplies to chlorine. Du Pont Ammonia sought low cost power—5 mills per KWH on the I. P. tariff—and coal for coking to produce hydrogen from water gas for ammonia synthesis. Those were the foundations laid down under the huge, nicely interrelated chemical manufacturing structure reared during the past dozen years.

It was in 1913 that Hugh Rollin bought a sizable frontage on the river at the eastern end of South Charleston and upon the English plan built a plant to make the double oxides of barium as a raw material for the manufacture of peroxide of hydrogen. He built in the substantial British fashion a sizable plant that required plenty of negro labor and did not count time as a factor of much importance. Came the War—as the movie captions say—and he added barium chloride, which Marden, Orth & Hastings sold, and also dabbled in the nitrate and carbonate salts. Came the Armistice. And the 1920 deflation. And especially the electrolytic process of manufacturing peroxide. The resulting mess was rather more stringy than usual. In 1923 the company was reorganized and the Barium Reduction Corporation formed. Colonel James J. Riley and his staff set to work to make over the Rollin plant to produce what they might profitably from the barium sulfide they got by the reduction of



Half of the biggest chlorine cell installation in America at Westvaco. To the left, the new coal receiving station from barges on the river; and to the right, the caustic soda evaporators at the Westvaco plant.

their sulfate ore from their own mines.

From the Ba atom they now get the double oxides (although their peroxide market has been cut to a few fine chemical manufacturers who require a very fine and stable product for pharmaceutical uses) also the carbonate, sulfate, chloride, and oxide. From the S they get sodium sulfide, shipped chiefly to Southern textile mills as a solvent for sulfur dyes; sodium sulfhydrate, ammonium sulfide, and hydrogen sulfide gas sold in cylinders to practically every laboratory in the country. In accomplishing these ends the old plant has been just about redesigned, certainly insofar as apparatus is concerned, and what especially tickles the Colonel's sense of humor is that the beautifully built, brick-lined drying tunnels are now capital storage rooms. To this fine friend this article owes a great deal. He acted as a sort of combination host and secretary, putting me up at his club, entertaining me royally, making all sorts of appointments, scheming to make my trip as pleasant and as profitable as possible. Whoever knows Col. Riley knows how delightfully and efficiently these friendly services were tendered.

In 1916 the Warner-Klipstein alliance built the electrolytic chlorine plant which has grown in two decades to the largest chlorine operation in the world. Marlin Geiger, who runs this plant with its vast battery of 4500 cells, would neither confirm nor deny this statement which to everyone else in Charleston is just naturally a fact.

"I don't know," he answered smiling. "During the War the United Alkali Company in England had a slightly bigger installed capacity, and I have no real figures on their present output. But," he added, "dare say it is safe to say that we are the only chlorine plant of our size that is working every available cell every hour of the year."

We were sitting in his roomy corner office up on the second floor. It was a broiling afternoon in the midst of that record hot week of last July, and the burden of his complaint—all good plant executives always have at least one thing they want very badly and cannot get from the management—was a set of Venetian blinds. "When you get back to New York tell them how I need them," he urged earnestly. He is a driving, hard-work, hard-play dynamo of energy,

and I mopped my face sympathetically. He concluded: "Of course, sun shades won't make chlorine, and what I really need is more power and more brine." Then he told me of the new brine well they had just sunk and how they are now taking in coal direct from barges off the river, a practical result of the Government's two new thirty-foot dams raising the stage of the upper Kanawha nine feet.

Row after row, row upon row, the big Vorce cell room is a sight impressive in much the same way as great massed bodies of troops are impressive—a veritable chlorine army. But while chlorine is more than the main product of Westvaco, being the starting point of other chemical processes, among the more important of these, carbon tetrachloride, which was one of the inspiring motives for the first establishment of this plant, is still an important item. Since the growth of the rayon industries the output of carbon bisulfide has been steadily increased. Trichlorethylene finds constantly bigger use for degreasing metals before enameling and in the dry cleaning industry, while zinc chloride is more and more important as the use of Haveg and other semi-plastic materials increases. From chlorine and hydrogen the plant makes its own hydrochloric acid. The flux, ammonium chloride, is another product and Westvaco again serves the rayon industry with sulfur dichloride, while the mono form goes chiefly to the rubber field. From the bittern, recovered from the brine which is literally pumped up from under the plant, the mixed calcium and magnesium chlorides are sold to the Fuel Processing Company for fuel treatment, road dusting, etc., and the bromine is turned into ethylene dibromide for the ethyl motor fuel blend.

During the War, just a few months after the chlorine plant was built, E. C. Klipstein started right next door to make dyes and intermediates in the plant which Calco has recently taken over. The original operation was for sulfur and azo dyes, dinitro-chlor-benzol and para-nitro-aniline. I suspect that Jimmy Dykes, who came down from Chrome, N. J., when this plant was first built, is a bit sentimental about the sulfur black unit.

"She's been a grand old plant," he said as, after peeping into the big refrigerator room, we stepped out of the building into the hot, blazing sun. "Not the biggest in the world, but she's turned out several million pounds, on top of the 14,000,000 pounds we made back in New Jersey. That's a lot of color, and we are proud that it was the very finest commercially successful sulfur black made in America."

B. H. Jacobson, the manager, was off in Europe on his honeymoon, and his assistant, Mr. Dykes, was doing the honors of the plant. "I suppose that here is what you might call our key product," he said, as we stood before a drum of white powder fuming as exposed to the air. "Scrap aluminum plus bromine plus chlorine to produce anhydrous aluminum chloride. Bromine has great affinity for aluminum and immediately forms aluminum bromide and is again immediately substituted by the chloride, and the aluminum chloride, which sublimes at 183°C, is condensed from the vapors. Mr. Jacobson who worked out this process had to solve plenty of tough problems in handling chlorine at the temperature of 1,000°C. generated in this reaction."

With virtually pure anhydrous aluminum chloride the well-known Friedel-Crafts reaction is employed to manufacture intermediates of the anthraquinone series, the other raw materials being benzene from Calco and phthalic anhydride from Selden while the intermediate is itself important in Calco's dye-making. The operation effects a neat little exchange within the Cyanamid family. The plant is producing also methyl and chloranthraquinone and ortho benzoyl benzoic acid and paratoluyl benzoic acid which beside its dye uses is going to makers of special cellulose products. Since 1931, when the Government authorized the use of chloracetophenone in one of the new denaturing formulas, this well-known tear gas has been made and the operation has of late been very busy supplying the police with this extremely efficient and humane weapon against strikers and mobs. I offer first-hand testimony as to its efficacy. We sampled it by firing a gas gun, which, by the way, looks exactly like a fountain pen. The shell is an ordinary .38 calibre cartridge with a small charge of black powder, loaded with a few crystals of chloracetophenone which are volatilized by the discharge. If you have ever gotten a couple of grains of tobacco or a few drops of tabasco into both eyes at once, you know just what the effect is. You cannot stay around, and for the tears you cannot see; but it passes off in a few minutes without harmful effects.

Following closely after these two plants was the establishment of the Belle Alkali up the valley at Belle. Since the removal of their erstwhile neighbor Sharples Solvents, who took in a sizable portion of Belle's 20 tons of chlorine a day, D. A. Stubblefield, who is noth-

The Kanawha River. In the center, Carbide's island. To the left, on the mainland, are the plants of Barium, Calco, and Westvaco.

ing if not a resourceful and energetic executive, has been thick in a revision of his plant's economics. To their own coal mines he is adding brine wells, which are already drilled with the copper evaporators installed and only waiting the completion of their pumping system. He has been adding new products, too, by chlorinating natural gas and is already marketing

Carbide's island from the Calco plant. The large buildings in the foreground are the laboratories.

methyl chloride and plans soon to add ethyl chloride and methylene dichloride.

But for new products the all-time Kanawha record is indubitably held by the Carbide and Carbon Chemicals Corporation. For ten years they have brought out a new one about every three months. And what is much more notable, half of them are brand new chemicals, and practically all of them manufactured by new processes developed by George Curme and his research associates in the corporation's own laboratories.

Thursday was Carbide day on my schedule. From seven, when Dr. Curme and I sat down to breakfast together, until eleven when our dinner party at the Kanawha Country Club with a score of the department managers broke up, I was personally conducted through Carbide properties by the men most directly responsible for their chemical developments.

It was a rare treat. How rare I began to appreciate when I found myself regarded as a sort of seven days' wonder by all of the inhabitants of the Charleston district. Using a new basic raw material, natural gas; producing new chemicals, chiefly in the aliphatic group, in the newest type of chemical operation, high pressure gas synthesis, and by original processes, it is understandable why they do not encourage promiscuous visiting. Late in the afternoon, after I had been shown almost everything and had almost forgotten to be very, very discreet in my questions, we came to a couple of big buildings and my mentor said jokingly, "Here is the Holy of Holies, where we make alcohol and butanol." Mr. Topham, the general superintendent, who had been with us, had lingered behind to speak with one of his foremen, and as we were about to enter the area a big, dark-haired, good-looking young chemical engineer (there are next to no workmen in this chemical plant) appeared blocking the way. "Excuse me," he said, "but you can't come in this building."

"My name is Curme."

"Oh, yes, Dr. Curme, I know who you are; but"—he hesitated just a breath, "unfortunately I don't know what you look like, and so," he concluded quite firmly, "you can't come in this building."

At this moment John Topham rejoined us and the guardian chemist stood aside. We stepped into the building, but not before the vice president in charge of development had thanked him for his vigilance. "Well," he said with a grin, "I couldn't take chances, could I?"

We started in forty miles up the valley from the chemical plant at Glen Ferris where is the old head-

Electro Metallurgical's (Carbide) new building, housing the electric furnaces at Alloy, W. Va. Automatic loading through the inclined shaft.

quarters of the Electro Metallurgical Company. Here we picked up G. T. Lancaster, one of the veterans of the Carbide staff with a record going back to the old experimental days with Willson at Spray, N. C., and E. H. Mangan, who is in charge of electric power generating. As we wound through the steep and very beautiful eight miles of the New River Gorge to the new power dam at Hawks Nest Mr. Lancaster told how, way back in 1896 Major Moorehead had envisioned the three-mile tunnel cutting off those eight winding miles of the gorge and giving a head of 162 feet; how he had with rare foresight secured water rights and land for the tunnel's right of way; and how the best modern hydro-electric engineering skill could only make slight modifications to improve the development program now nearing completion but planned nearly forty years ago. From the dam we came back to the new electrical power plant and watched the welders at work on the last few sections of the 32-foot cross-section of tunnel above the pent stocks. In the new plant below are four 35,000 HP wheels—with a place left for a fifth—to generate 90,000 KVA, at 6900 volts. Down the river to the new steam power plant—

one of those gigantic, spotless, automatic steam-making machines, and up the mountain to the coal mines whence the fuel is swung down in buckets by gravity to the feed hoppers. Thence to the long battery of electric furnaces where all this power is consumed in producing ferro-chrome, ferro-manganese, silicon, vanadium and other alloys, the largest output in America, the result of the great work of Frederick M. Becket. He set out fifteen years ago to find uses for the surplus cheap power the company had under contract at Niagara, so that now the Electro Metallurgical Company boasts it can make anything the steel industry wants from an electrical furnace, which is quite a boast and not an idle one. And so, down the river, to the Pyrofax plant, and on to the strictly chemical operations at South Charleston.

The Carbide & Carbon Chemicals Corporation really began operations in 1920 at Clendenin, twenty miles up the Elk River, and the men who waded through the mud and grief of that first plant-scale effort (most of them now grizzled veterans of about thirty-five years in charge of all sorts of operating units and departments) cherish a warm tradition of loyal fellowship that all the great new plants on the Kanawha cannot quench. John Topham, the quiet, friendly, working superintendent, is of that select band.

If the head of this teeming plant is the fine administration building just opposite the entrance on the mainland, its heart and soul is a quadrangle of brick laboratories just across the private bridge to the island in the Kanawha which the company owns and has already half filled with plant structures and storage tanks. In the front is the analytic department. To the left are the research laboratories. In the rear are the development laboratories, while to the right of the square are semi-plant operations, now busy producing various vinyl plastic compounds. For no chemical enterprise in the country today is so directly founded upon its own laboratory work.

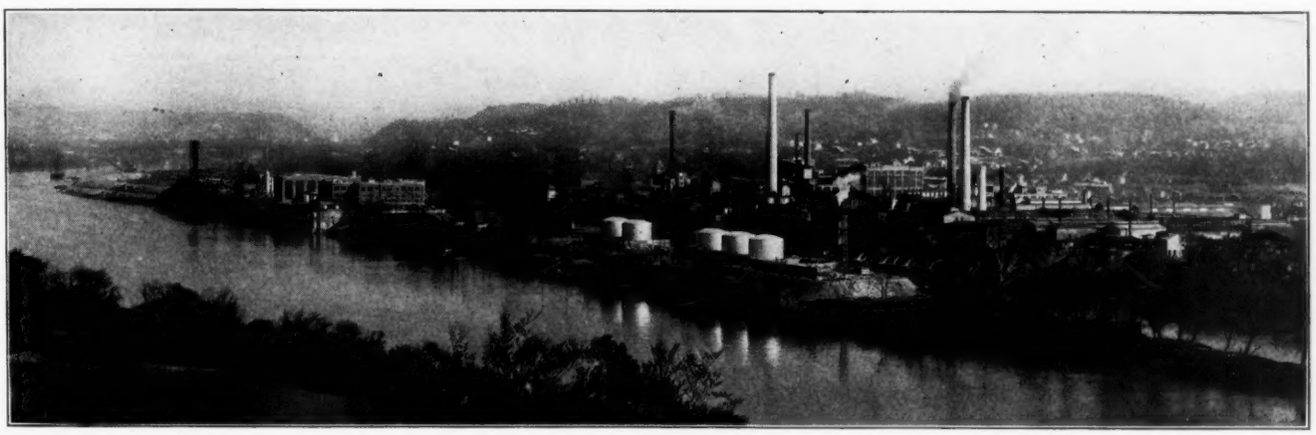
Here is literally a new chemical industry—the making of synthetic aliphatic compounds from hydrocarbon gases, which means commercially new solvents and plasticizers that a few years ago were laboratory specialties or industrial by-products, which are now produced synthetically at low price, with assured output, available in any needed quantity. Not only are the three most important alcohols—ethyl, methyl, butyl—produced synthetically and hence quite freed from the market fluctuations of natural raw materials—but some three dozen highly specialized solvents, aldehydes, ethers, esters, glycols, ketones and chlorhydrocarbons are made, putting into the hands of industry a wide variety of different specific chemical and physical properties invaluable in modern technique. The high spots of the development are: 1924, ethylene glycol; 1928, cello-solve; 1929, acetone; 1930, ethyl alcohol; 1932, butyl alcohol.

And the great chemical city of compressors and pumps, stills and evaporators, all bound together by an amazing network of pipe lines, is a thoroughly American accomplishment. In all the world there is nothing like it. It is as American as the Grand Canyon, or a skyscraper, or an ear of corn. It is a chemical accomplishment which we can proudly place against the historical alkali industry of England or Germany's coal-tar industry, and we can wager that it will in the future have quite as deep and lasting effects upon our industrial evolution since it touches so closely those forward-looking industries that are handling cellulose and synthetic plastics.

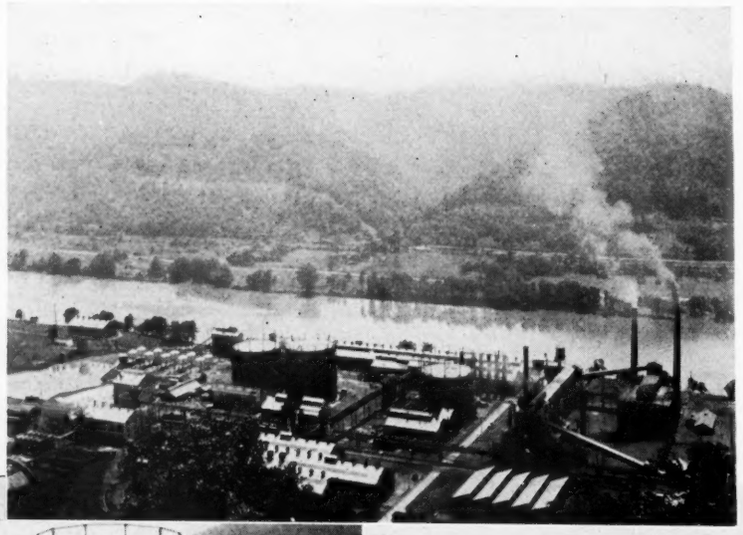
Only about ten miles off, at Belle, is a similar yet quite distinct example of what the resourcefulness of a great chemical organization can accomplish. Here du Pont is synthesizing ammonia, methanol, and higher alcohols. And right today they have just built a new unit to produce urea and are building a new benzol recovery plant beside their battery of coke ovens.

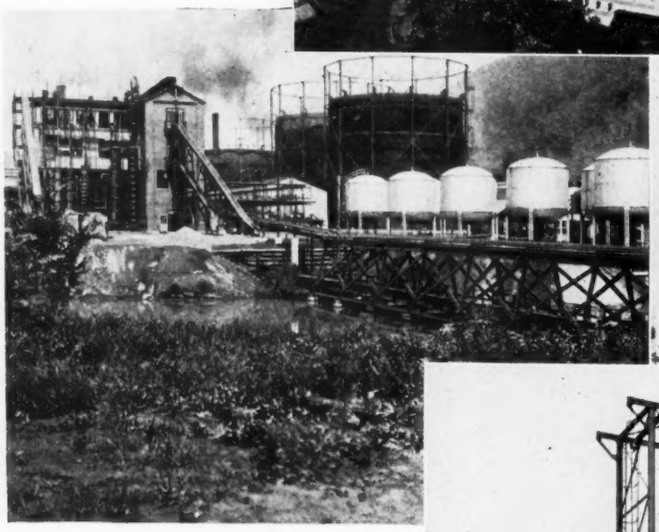
"And what about recovering the by-product ammonia?" I asked.

"Not a chance!" snapped back Dr. R. L. Dodge, the process manager, who has charge of the chemi-



From the Charleston bank, a view of the Carbide & Carbon Chemicals Corporation's operation on the island and the plants on the mainland beyond.





Du Pont Ammonia Corp., at Belle. Above, a general view of the plant; the ammonia unit beyond the large tanks close to the river. Left, view from the extreme left of the above picture. Construction work on the new benzol recovery plant just out of the picture on the right. Below, the new synthetic urea plant.

On the opposite page, plant of the Rubber Service Laboratories, at Nitro, W. Va., showing two close-up views of the small unit batch operations, as carried on here in the manufacture of a great number of chemical specialty products, with a general view of the cluster of buildings in which these operations are performed.

cal engineering side of the Belle plant.

"Well, why should we?" asked J. L. E. Cheetham, the general manager. "Here we exist solely because of our ability to combine hydrogen from water-gas with nitrogen from the air cheaper than anyone can make by-product ammonia sulfate. As we're coking hundreds of tons of coal a day, we ought to know, and" —he looked out of his office window at the great plant —"well, I guess there's the proof."

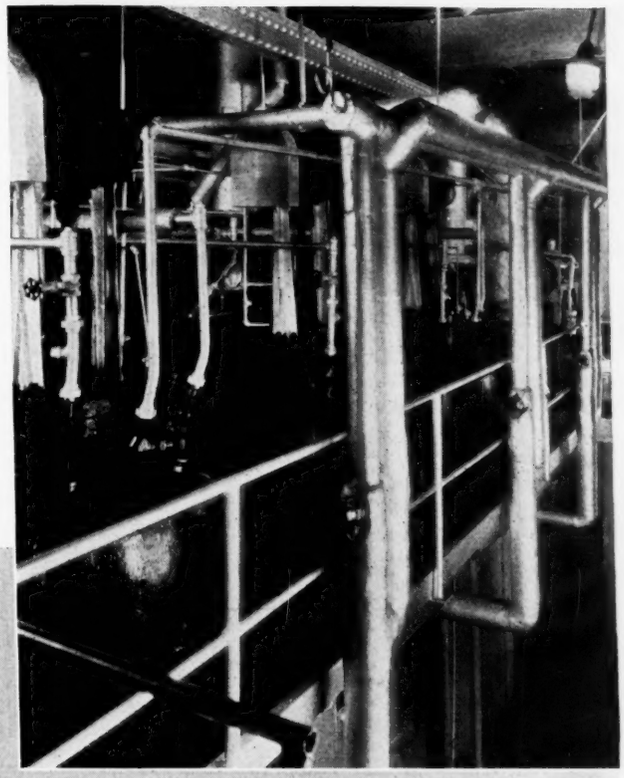
Dr. Dodge took me through the plant and pointed out in detail the adaptation of the process.

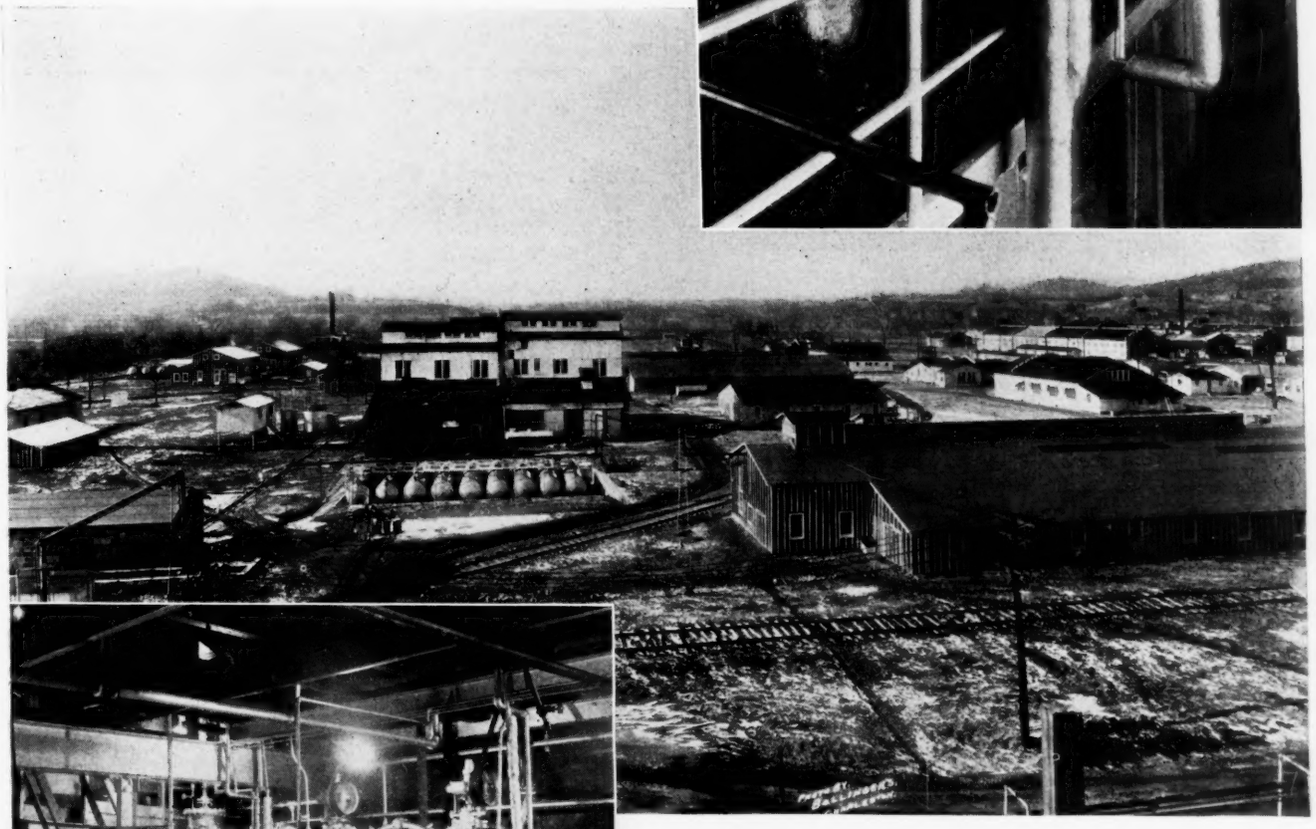
"This plant originally was based on French design, and much of the apparatus was French. As with all new processes there were troubles. But we learned, and we licked these troubles. There have been sweeping changes in the method of gas purification. Another big change has been in stepping up the synthesis unit capacities more than five-fold by changes in mechanical design and by changes in the catalyst. We also departed in some cases from the 1,000 atmospheres pressure of the Claude process. We have increased the converter unit capacities at least ten-fold by change in design, by increase in size, and by change in the process and catalyst."

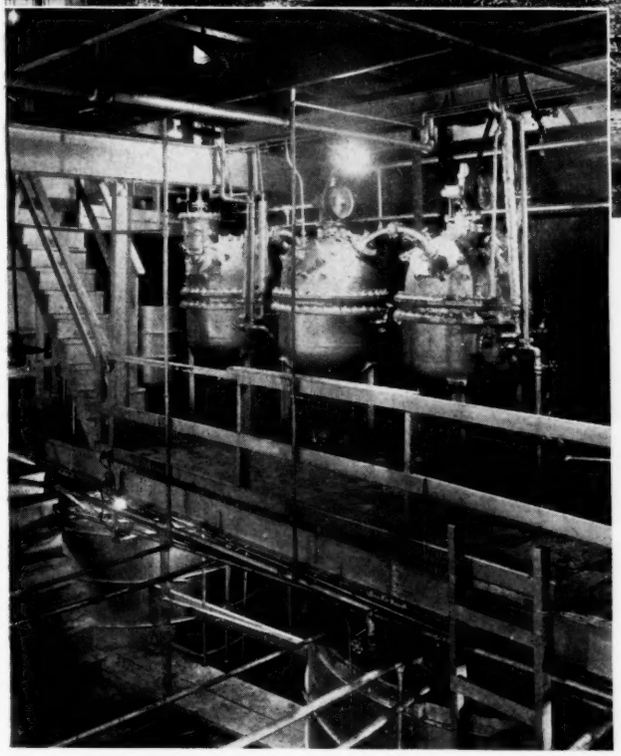
Following the ammonia synthesis technique, processes were developed for making methanol and higher alcohols. These higher alcohols are normal propyl (but no isopropyl) isobutyl (but no normal) and primary and secondary amyls—which are all being isolated—and above these the constituents, mainly higher alcohols, are sold as mixtures.

Another feature of this interesting plant—especially when one thinks in terms of nitrogen for national defense—is its flexibility. Either the ammonia or the methanol plant is inter-convertible, so that the output of either main product might thus be quickly increased.

Here obviously the crux of the chemistry involved is hydrogen—cheap hydrogen and pure hydrogen. Coal, air and water are the only raw materials taken in, and among the many careful means to assure gas purity







there has been developed an automatic analyzer to detect .001 grain of organic sulfur in 100 cubic feet of gas. In ordinary gas works practically 30 grains per 100 cubic feet passes. The analysis, which records by an arrow through the brown color of lead sulfide as detected by a photo-electric cell, has the advantage of giving an instantaneous and continuous record, while the old analysis required several hours, the results being practically "ancient history" when reported.

This busy, growing nitrogen synthesis plant of the du Ponts, with its record of battling through to commercial success, could not but stand out in my mind in sharpest contrast to the vast tomb-like Government-owned nitrogen plants I had seen but a few weeks before at Muscle Shoals. But right in the same Ka-

nawha Valley, about as far on the other side of Charleston as Belle lies eastward, stands the Government-built chemical city of Nitro, which might well serve as a horrible example to the unbelievers in rugged individualism. The map of Nitro—I studied one with keenest interest, for I visited Nitro ten years ago before "moth and rust doth corrupt"—this map shows two brightly-colored spots, the big nitrating plant of the Viscose Company, and the cluster of smaller buildings labeled "Rubber Service Laboratories." All over the rest of the map are black squares and oblongs marked "Ruins of Nitric Acid Plant," "Ruins of This" and "Ruins of That."

Like a huckleberry in a milk pan the trim and busy plant of the Rubber Service Laboratories stands out against these ruins.

"We've got a regular custom-made business in a whole group of patented chemical specialties, chiefly for the rubber compounding industries," was how Carl N. Hand, founder of the business and still in charge since its amalgamation with Monsanto, expressed it. "We are regularly making about 75 different products, many of them in small batches. But that is not all our versatile tale, for we can be reasonably sure our best seller today will not be in big demand even three years hence. It's a regular on again, off again, gone again life, which certainly keeps our research, all of which is done right here at Nitro, on its toes. It's never monotonous. Sometimes it's highly exciting. I like it, and now let's see just how we work in a lot of small units which must all be more or less interchangeable."

"We get alcohol, acetone, caustic, carbon bisulfide, aldehydes all locally. Our aniline comes naturally from St. Louis. Potash is about our only really outside material, and we have cheap electric power. This is really a good location, for you must remember we are quite close to Akron."

"Why did we settle here? Well, primarily because we could get a good plant cheap with a lot of various apparatus in several small buildings. We bought out the old Southern Dyestuffs in 1927. But the chief reason is, that this was a real bargain plant."

"Why," I asked, "didn't Carbide or du Pont come to Nitro?"

He shrugged his shoulders and replied, "Now that almost all the good flat land along the river is taken up, some folks are looking for quite a boom in Nitro."

And while I was working out my own answer to my question he continued. "I like it here. The Viscose people and ourselves have a grand little chemical community up there in the hills." I found out later they have indeed—a real community of fine homes with large grounds and in a rare atmosphere of intelligence and friendship. Also I caught the rumor that someone has struck gas right in the middle of the empty city. So in time Nitro will surely come into its own. Then we shall have an almost unbroken line of chemical operations extending fifty miles along the Kanawha.

Industry's Bookshelf

Building An Engineering Career, by C. C. Williams, 247 pages, published by McGraw-Hill Book Co., 330 W. 42 St., N. Y. City. $2.00.

Planned to induct the freshman into engineering, imparting to him the engineering vocabulary and mode of thinking, sustaining his interest in the romance and drama of engineering achievement, equipping him to proceed effectively, and inspiring him to exert himself along the way. Book hangs the instruction on the history of engineering development and narrative.

Industrial Toxicology, by Alice Hamilton, 329 pages, published by Harper & Brothers, 49 E. 33 St., N. Y. City. $3.00.

Book is designed for the practitioner to acquaint him with the newer forms of industrial poisoning, but industrial plant managers and those directly concerned with safety work in chemical plants will find this volume invaluable.

Annual Review of Biochemistry, Vol III, 1934, James Murray Luck, Editor, published by Stanford University Press, Stanford University, Calif. $5.00.

A selection of the most important papers of the year in the growing field of biochemistry.

Centrifugal Pumps, Turbines, and Propellers, by Wilhelm Spannhake, 328 pages, published by The Technology Press, Massachusetts Institute of Technology, Cambridge, Mass. $5.00.

A text that deals authoritatively with the fundamental principles and is more suitable for use in connection with teaching than in the field as a handbook.

Cost Accounting For Control, by Thomas Henry Sanders, 517 pages; published by McGraw-Hill Book Co., 330 W. 42 St., N. Y. City. $4.00.

The 2nd edition, greatly enlarged, contains discussions of the new problems presented under the NRA. While the book is primarily a textbook, it is directly of value to those charged with accounting practices and assignment of costs in manufacturing plants.

Metallurgy of Iron and Steel, by Bradley Stoughton, 559 pages; published by McGraw-Hill Book Co., 330 W. 42 St., N. Y. City. $4.00.

The 4th edition of this well-known volume has been completely rewritten from end to end. Primarily a textbook, for use in the college classroom, the engineer and those engaged in occupations allied to or depending upon the metallurgy of steel will find this book helpful.

Die Technik der Chemischen Operationen, by Walter Bader, 416 p., published by B. Wepf & Cie., Basel, Switzerland, Price, paper 18 fr. S., cloth 20 fr. S.

A practising chemical engineer has crystallized his years of experience in this introductory textbook. Written with a minimum of mathematics, it covers in succession the theory and practise of chemical engineering unit processes.

The Curse of The Empties

Like the poor the empty returnable container is always with us; and the progress made in using one-way shippers prompts this experienced sales manager of a company that makes, imports, and jobs chemicals to hope for a solution of this ancient problem. He presents a couple of "horrible examples" and does not hesitate to handle this delicate subject without gloves.

By H. Gordon MacKelcan

Vice President in Charge of Sales, Innis Speiden and Co.

FOR many years the empty container has been a thorn in the flesh of nearly all handlers and manufacturers of such commodities as aqua ammonia, sulfuric acid, nitric acid, acetic acid, formic acid, carbon tetrachloride, glycerine, liquid caustic soda, liquid caustic potash and many other chemicals in liquid form.

The cost of doing business in these commodities is much increased due to the enormous investment on the part of manufacturers and distributors, for the containers, additional overhead and operating cost, due to return freight, maintenance of containers and excessive clerical work made necessary in order to properly keep track of them, and to issue correct credit memorandums to customers after containers have been returned.

The facts in the following case should bring home the waste of money, the lost motion, the useless consumption of good time, which often occurs as a natural result of the desire on the part of the manufacturer or distributor to satisfy a good customer insofar as possible.

During the month of September, 1926, my company made two shipments to a customer in a distant state, fully 1200 miles from New York City. One shipment consisted of a carboy of ammonia, 26°, and the other was one carboy of glacial acetic acid. The material was billed to the customer and the carboys were charged extra at $5.00 each. The invoices stated that they were returnable for full credit if in good condition within 90 days, provided they were returned freight prepaid. The customer did not return the carboys within 90 days, nor did they mention any desire to return them for over 4 years.

Late in December, 1930, however, we received an arrival notice from one of the transportation companies covering two empty carboys, and we arranged to have our truck pick them up and remove them to our warehouse. They were examined by the warehousemen and were found to contain marks which clearly indicated that they had not originated from us. Therefore, the customer was written, explaining that the carboys did not belong to us, and that credit could not be allowed; asking for proper shipping instructions.

There then followed a series of letters, back and forth; the customer assuring us that the carboys had come from us, and insisting on credit. Later they decided that it would be cheaper to allow us to sell the carboys here in New York and accept a check for the proceeds of such sale, but it was eventually found that even second-hand dealers of carboys could not afford to pay even $1.00 apiece for them, and strange as it may seem, it was impossible for us to get rid of them at any price, or even to get a second-hand dealer to come and cart them away.

All of this information was placed before the customer, and finally, in September, 1931, they requested the company to hold the containers in our warehouse, with the hope that they might some day be used for some purpose, requesting that if such should be the case, we would at that time send them our check for whatever it might be possible to secure.

Our files indicate that a total of thirteen letters were written by the company to the customer and the second hand carboy dealer; and we have no way of knowing how many telephone calls were made in connection with this matter, nor how much time was spent by the various clerks in the office in an effort to satisfy the customer.

The total value of the materials shipped in those two carboys was only about $22.00. As we are distributors and not manufacturers of these products, our entire gross profit in the transaction was probably not more than 10%, or roughly about $2.25. We could not possibly oblige the customer by issuing credit of $10.00 for the return of the two carboys when there was no possible way whereby they could be returned by us for a like amount to our principals. Nevertheless, I do not doubt that the customer felt we had been somewhat arbitrary in our polite but firm refusal to fully accede to their wishes.

Now this, I will grant, is an extreme case, in that so much time elapsed between the time of the sale and the time the customer attempted to return containers which had been secured from other sources. How-

ever, any chemical man will recognize that it is a good illustration of the waste of effort in a surprisingly large number of transactions involving the return of empty containers for credit.

Another evil to be considered is the practice of buyers of arbitrarily deducting the container charge when making payment of invoices. A surprisingly large number of consumers feel that the manufacturer or distributor should loan such containers to the customers, billing them on memorandum only; allowing them to be returned, freight collect, when empty.

Our company has been told, and I know other companies have been told, by certain customers, that some suppliers allow this practice. There should be no disagreement among the chemical sellers on this point. It is obvious that if such a practice were permitted on a large scale, it would increase the financial investment to an extent that it would soon become impossible for a great many companies to continue to do business, because too large a portion of their capital would be tied up in non-interest producing containers.

Depreciation on Containers

Containers depreciate in value just as quickly as any other form of equipment, such as machinery, trucks, etc., and as pointed out, a carboy properly boxed to comply with I.C.C. specifications, which originally costs a manufacturer or distributor $5.00 or more, and which is charged to the customer at that figure, cannot actually be sold as a second-hand carboy at anywhere near such a figure.

The investment in 2,000 carboys would be $10,000.00, and during the first year of use, let us suppose their value had depreciated to $3.75 as second hand. Thus with your investment of $10,000.00 you would have cut into your profit to the extent of $600.00 for interest on the investment at 6% and $2,500.00 for depreciated value of equipment, or a total of $3,100.00 container expense for the first year, which certainly would reduce your gross profit very seriously on such items as ammonia, formic acid, and formaldehyde.

The matter of breakage has to be dealt with very frequently, as the glass bottles, no matter how well protected by the wooden boxes, somehow get broken. In a great many instances it is difficult to place the responsibility for the breakage. The customer feels that he should receive full credit equalling the amount of his deposit, and the supplier, naturally, is anxious to pass credit for only the value of the container in its broken condition, which is certainly not more than $2.00. Much correspondence is sometimes required to settle these differences in opinion which might easily result in the loss of an otherwise good customer.

During the past few years certain manufacturers have collaborated with manufacturers of containers, with the idea in mind to develop new types of packages, suitable for some of the liquid forms of chemicals which would be strong enough to pass the I.C.C. requirements and yet cheap enough to allow them to include their value in the sales price of the merchandise. These developments will be watched with great interest, and should have the most hearty support of all chemical manufacturers and distributors.

One troublesome product in particular has come into a non-returnable class, carbon tetrachloride, formerly shipped in galvanized steel drums, worth from $7.50 to $15.00, depending on the size, is now being supplied in a non-returnable container, included in the price.

Many other containers are much more expensive than carboys, and ordinary drums, such as the cylinders in which anhydrous ammonia, chlorine and other gases under pressure are shipped. It is often the case that the container is worth more than the contents, and represents an enormous investment on the part of the manufacturers, and a very great depreciation based on the length of service and the number of trips to and from the manufacturers' plants. We recognize that many commercial chemicals cannot be shipped in containers which can possibly be included in the price and are thus not returnable. I do feel that consumers properly recognize the investment on the part of the manufacturers and see to it that they are treated as a part of the invoice, and are paid for with the merchandise, are properly cared for while in consumers' possession, and returned just as quickly as possible to the manufacturers, all of which will result in a lower cost of production to the manufacturers which can be reflected to the consumers in lower prices.

Production and Sales Arsenic '33

To supply the industry promptly with data on arsenic production during the past year, the following information is furnished by the United States Bureau of Mines.

Production of arsenious oxide (white arsenic) in the U. S. dropped in 1933 to 10,650 short tons—the smallest quantity since 1926. Approximately two-thirds (7,181 tons) was refined, and the remainder (3,469 tons) crude.

Sales of refined and crude arsenic amounted to 11,797 tons valued at $636,132. Approximately 75 per cent. (8,768 tons) was sold as refined white arsenic, for $489,549, and the remainder (3,029 tons) as crude arsenic, for $146,583.

No revision was made in the price of 4 cents a pound for white arsenic delivered at New York, in barrels. This quotation has become a fixture since 1927. The average receipts actually obtained from sales by producers in 1933 as reported to the Bureau of Mines were 2.80 cents per pound for refined and 2.40 cents for crude arsenic. These prices, of course, do not include freight. The averages reported in 1932 were 2.67 and 2.28 cents, respectively.

In 1933, imports of white arsenic rose to 10,583 short tons valued at $512,542, the highest figure since 1929; in 1932, only 6,882 short tons valued at $357,991 were imported. Imports from Mexico which formerly furnished the bulk of the foreign arsenic used in the United States showed a gain of a few hundred pounds (4,040 short tons valued at $256,511 in 1933, compared with 3,325 short tons valued at $182,671 in 1932).

Polishes and Cleaners for Automobile Finishes

By Cyril S. Kimball

Foster D. Snell, Inc.

THE polishes for automobiles are even newer than the automobile industry. At first the mere ownership of a horseless carriage was sufficient. Attempts to clean and polish it soon followed, using a technique previously developed for carriages. The present diverse line of cleaner-polishes, waxes, rubbing compounds, emulsion polishes, traffic film removers, etc., is a natural evolution.

Early Developments

The development of the field can only be considered in its relation to the development of finishes, which were varnish at first, later baked-on enamel and more recently lacquer. The three types of surface have required three different types of treatment to bring about restoration of the lustre or polish to a dulled or dirty finish. This quite naturally follows if we consider the diverse composition and properties of the three types of finishes that have been used. The early automobile bodies were finished with waterproof varnishes. These consisted of natural gums and resins dissolved in drying oils such as linseed or China wood. After long exposure to weather it was not uncommon for these surfaces to become checked or crazed. At a later period in the industry parts of the surfaces, such as fenders, etc., were coated with baked-on enamel. In some cases the greater part of the outer surfaces were finished with the latter material. Baking enamels are similar in composition to varnishes except that less resins, less drier and more oils are used. The coated surface is baked in drying ovens and hence becomes harder and more resistant to wear than varnished surfaces. Baked enamels are very resistant to attack by the elements but sometimes develop a blush or haze beneath the ultimate surface, probably due to degradation of the pigments employed. Early in the 1920's automobile manufacturers started using lacquer, or "Duco" as it was commonly called, as a finish. Lacquer had been known for many years but previous to this time a lacquer of sufficient concentration to render its application economical had not been produced. Lacquers are composed essentially of nitro-cellulose dissolved in suitable solvents and diluents to which resins, oils and pigments are added to produce workability and stability. They differ greatly from varnishes and chemicals. In general, lacquers deteriorate more rapidly than the other finishes. The difference was much more pronounced some years ago than it is today due to the progress made in this industry. Even today lacquers become dulled due to a surface deterioration resulting in a dead film of nitrocellulose. Checking and crazing is very infrequent on these surfaces at the present time.

Non-Abrasive Polishes

For a varnished surface a mineral oil or emulsion of mineral oil in water is suitable for polishing. The types of polishes used on varnished automobiles varied over the range of composition of furniture polishes of that era. Many of the first automobile polishes were simply a clear, light neutral oil such as Mineral Seal oil. Because the latter oil is quite volatile, somewhat heavier oils gradually replaced it. Then in order to apply thin films of heavier oils, emulsions of soap, oil and water and mineral oil, sulfonated oil and water were used. These first emulsion polishes had the serious drawback of leaving a film of water soluble material on the varnished surface along with the oil, so that the surface became water spotted after exposure to a rain.

To a large extent the similarity of automobile and furniture polish has disappeared, but there are still mineral oil type polishes which are claimed to be satisfactory automobile polishes, a claim not substantiated by the sale for that purpose or by the occasional user who tries it.

For a baked-on enamel finish a mild acid abrasive cleaner is very suitable. The early acid type automobile polishes consisted of oil in a suspension of diatomaceous earth in water, to which various manufacturers added acetic acid, oxalic acid, hydrochloric acid, sulfuric acid, etc.

The use of acetic acid probably came from the corresponding use in the furniture polish industry where either vinegar or acetic acid were for a time quite commonly added. Oxalic acid was at one time widely used as a free acid in metal polish, although today it is usually neutralized and present only as the salt. That probably explains the utilization of that acid in automobile polishes. It was also common practice in the manufacture of furniture polish to use either antimony chloride, which hydrolyzes to hydrochloric acid, or to add hydrochloride acid. The carry-over into automobile polish there is clear. Presumably the use of sulfuric acid was introduced by someone who wanted to use a very drastic cleaner. Many manufacturers had their own rule-of-thumb mixtures of acids which were supposed to give much superior results to those obtainable with other acids. The degree of acidity varied from a fraction to as much as 4 per cent.

"Caking"

The stability of the acid-type automobile polishes was not of the best. In many cases the abrasive caked hard in the bottom of the bottle. The phrase "shake well before using" was a common marking on the container. Many manufacturers still use it on stable products because they forgot to remove it from the copy reproduced on the container even though they may have changed their style of container and their style of label. No really satisfactory stabilizing agents were available which could be used in acid solution. Probably the most satisfactory device was that of wetting the abrasive with mineral oil before mixing it with the various other ingredients. The specific gravity of the abrasive being higher-than-that-of-water was then partly compensated for by the gravity of the oil which is less-than-that-of-water. The coated abrasive particles buoyed up by the oil stayed in suspension to a substantial extent. Unfortunately, the presence of a good wetting agent in the automobile polish would have its effect in separating the oil film from the abrasive particles by "preferential wetting." This type of product usually contained glycerine as a wetting agent. Therefore, in many cases the originally stable product became unstable sooner or later and the abrasive caked hopelessly in the bottom of the bottle.

The film which developed on the surface to be cleaned was simply an accumulation of grease and dust —bear in mind that in that period there were still many dusty roads. It was commonly spoken of as a traffic film. The operation of the automobile polish was, first to wet the film, second to remove the traffic film by the action of a mild abrasive in order to get down to the surface of the baked-enamel, and third to deposit on that enamel a very light coating of mineral oil. Since the enamel was entirely non-absorbent, the mineral oil used was usually very low in viscosity, corresponding to Mineral Seal oil. It is not an unreasonable supposition that the nature of the traffic film to be removed differed sufficiently from that to be removed today, to render acid particularly effective in that era.

Neutral Type Cleaner Polish

When the manufacturers of automobiles started the use of lacquers the transition to their use came rapidly. By 1926 practically all automobile finishes, excepting fenders, were lacquer finishes. Shortly after it was found that the old acid-type polish was not the best polish for this type of surface. The early lacquer finishes tended to crack and craze and often the acid would cause serious damage to the finish by remaining in these fissures and becoming concentrated by evaporation. About 1927 the neutral type cleaner polishes —polishes without acid—made their appearance on the market. The first of these were poor emulsions of mineral oil in water solutions containing gums and an abrasive in suspension. Amorphous silica, tripoli and diatomaceous earth were used as the abrasive or effective cleaner. The early use of harsh abrasive was later found to be unnecessary and soft air floated grades of diatomaceous earth were substituted. Before this was done, however, the manufacturers were confronted with a "boogie" which still persists in offering sales resistance to them. It was the result of nitrocellulose lacquers differing greatly in properties from enamels.

Enamels are stable to light, whereas nitrocellulose, the base of lacquer, is unstable. Therefore, lacquers are very highly pigmented. The attack of sunlight on the surface penetrates only to a very shallow depth, further penetration being prevented by the opacity of the pigment. The resulting film of dead nitrocellulose on the surface is necessarily removed in any cleaning and polishing operation. Of late years one manufacturer of polishes has been conducting an educational advertising campaign pointing this out to the users of their polish. For several years, many people when cleaning a car thought that the presence of color on the cleaning rag meant that the polish was undesirably attacking the finish of the car, that the polish was unduly drastic, and that its use was dangerous. Some manufacturers avoid the issue by coloring their polishes highly so that the color removed with the dead lacquer film does not show up on the cleaning rag.

While it is true that this will eventually result in the complete removal of the lacquer, it is improbable that any automobile owner would polish it often enough to wear through the lacquer finish. The problem is more serious with the striping on a car, as in some cases successive applications of polish do mar the appearance. Nothing can be done about it, however, without changing the composition of lacquer, which has been radically altered in the past few years.

The first neutral type cleaner polishes had a serious fault common with the acid-type polishes, namely, that

the abrasive settled out to form a hard cake on the bottom of the container. With the acid eliminated from the formula the field was opened up for the production of stable suspensions. Many incompletely stabilized products were produced, but gradually the products with the abrasive in the bottom of the bottle and the oil floating on the top have been eliminated. Practically every type of emulsifying and suspending agent has been tried, varying from gelatin to carbohydrates, from sulfonated oil to saponin. The attack of even mild alkalinity on lacquer is such that soaps cannot be used. Among the most satisfactory materials for the purpose have been some of the natural gums, and at least one patented emulsifying agent is widely used in the production of stable products of this type. So in the transition from the acid-type to the neutral-type of cleaning polish a complicated formula has been built up. A typical composition of the present day consists of an abrasive, mineral oil, a wetting agent, water and from one to four different or similar types of stabilizing agents.

Durability of Cleaner-Polishes

The abrasive almost universally used in cleaner-polishes is a type of salt water diatom, sold under various trade names. The sale of this abrasive to automobile polish manufacturers is largely monopolized by one producer. The oils used have ranged from very light oils such as kerosene or Stoddard solvent, used in admixture with heavier oils, to a medium spindle oil. The tendency has long been toward the paraffin base, very light, spindle oil or neutral oil. Among the recent developments in that field have been the production of a very light highly refined mineral oil from which nearly all oxidizable material has been removed. This prevents even a slight oxidation of the oil film which is left on the finished surface after polishing, therefore prolonging the lustre. Experience indicates that with a highly refined oil a somewhat heavier or less volatile grade can be used.

The durability of the polish produced with these cleaner-polishes is very much a matter of opinion among users. Some claim the finish lasts for only a couple of days. Others claim that the resulting finish is satisfactory for a period of two or three weeks. Unquestionably part of the difference is one of a difference in standards demanded by different users of polishes.

Many manufacturers as well as users of automobile polishes do not appreciate all of the factors which enter into a desirable product. These may be outlined as follows: The abrasive should be uniformly suspended and the oil uniformly dispersed throughout the product, remaining thus without shaking. This avoids the possibility of one application getting a large amount of oil on the surface and another application getting a large amount of abrasive with very little oil. The polish must have the property of wetting the surface readily. Remember that the surface of an automobile has a traffic film on it which is to some extent greasy in nature; the polish which does not have good wetting properties does not wet the surface readily. The analogy is somewhat like trying to wet a piece of waxed paper with water. When the polish does wet the surface readily it must have good penetrating powers on the traffic film in order to loosen it so that it will readily slough off. The abrasive present must be of such a character as to remove the surface film or dead lacquer and at the same time not sufficiently harsh to produce a visible mark or scratch on the lacquered surface. In the same operation the polish should also leave deposited on the lacquer a protective film of oil. In the polishing operation, for which clean rags must always be used, this oiled surface is rubbed up to a high polish. Too high viscosity of the mineral oil results in greasiness, and the film cannot be rubbed down sufficiently thin. The result in that case is a greasy finish. If the oil used is too light in gravity it will be correspondingly volatile and the polished effect obtained may be only transitory. It is essential also that no water-soluble material be present in this oil film. In cases where water soluble material is so present the resulting film often turns white as soon as any water comes in contact with it.

As would be expected, the packing of the acid-type automobile polishes was in glass bottles with corks or with acid resistant liners in the closures. To a large extent, the elaborate closures of the present day had not yet been developed. In contrast with this neutral cleaner-polishes have resulted in packing in tin cans, which is more convenient if not less expensive for the manufacturer. These cans come in all colors of the rainbow and can be shipped with less packing and without danger of breaking. The change to a can was first accepted by the public as showing that the product was not acid, and therefore would not be injurious to the finish of the car. Practically few automobile polishes were ever of a composition which would be injurious to the finish. This public demand required the packing of neutral cleaner-polish in tin cans, whether the manufacturer wished or not, a change which appears to be permanent.

Emulsion Polishes

There are two conditions under which a neutral cleaner-polish is not well adapted. When a car is washed in a garage on the wash rack the resulting surface is clean but not bright and lustrous. The use of a cleaner-polish will restore the lustre but in order to use this type of polish with reasonable ease it should be allowed to dry out on the surface. The need for a polish which could be applied to a wet car and immediately rubbed up resulted in the development of emulsion polishes not containing abrasives. These consist of mineral oil and usually some saponifiable oil, such as castor or linseed, emulsified in water with the least amount of other ingredients possible. Often volatile

solvents are added to speed up the evaporation of the excess polish applied to the surface and bring about deposition of a thin film of oil. A straight oil polish cannot be used because the car is wet. When an emulsion polish is applied the oil preferentially wets the lacquered surface, displacing the water film from this surface. This can then be rubbed up to give the desired gloss. Emulsion polishes are frequently spoken of as wash-rack polishes because of the main field of their use.

Badly Degraded Lacquer

The other condition where a cleaner polish fails to work properly is on a surface where the lacquer has become very badly degraded. Here the diatomaceous earth is not sufficiently abrasive in character to wear off the decomposed lacquer film. It is then necessary to use a rubbing compound or road haze remover which contains harsher abrasives. In the process of removing the dead lacquer film the dirt is automatically removed. Again there is need of a quick acting polish which will only enhance the lustre of this cleaned surface. Within the past few years one manufacturer has made a rather striking success by marketing an emulsion polish and a road haze remover in conjunction with each other. Needless to say the natural public demand has been greatly stimulated by large scale advertising.

The emulsion or wash rack polish is wholly a development since the rise of lacquer finishes. It combines the old principles of a furniture polish with the new principles of emulsions and lacquer surfaces. It is significant to note that most wash-rack polishes produce a lustre having greater depth than that produced by cleaner-polishes, no doubt due to the use of saponifiable oils, which have a different refractive index than straight mineral oil. The combination of mineral and saponifiable oils is not commonly employed in cleaner-polishes for two reasons. First, it is much more difficult to emulsify the mixture, and second, the introduction of saponifiable oil makes cleaner-polishes somewhat greasy and gummy unless due care is taken in formulating them.

Mention has been made above of the need of using cleaners containing abrasives, harsher than diatomaceous earth, in order to remove superficial films of degraded lacquer from automobile surfaces. These cleaners are not in any sense polishes nor are they intended or expected to produce a brilliant gloss. The liquid type has become commonly known as road haze remover. This name is really a misnomer. Actually cleaner-polishes are just as much road haze removers as the special cleaners called by that name. The paste type products are known as rubbing compounds or as just plain paste cleaners. Some of these are designated by manufacturers by some trademarked name without any mention of rubbing compound or paste cleaner.

There is another use for rubbing compounds, namely, the rubbing down of freshly lacquered surfaces to remove brush marks or irregularities produced in spraying the lacquer. This use parallels earlier use of these compounds on varnished surfaces. Large quantities of paste rubbing compound are used by automobile manufacturers and refinishers. Here the paste is usually applied and removed by means of an electric buffing machine or wheel. Due to the efforts of some manufacturers who recommend their use before the application of wax, the public has taken up the use of rubbing compounds more and more.

Liquid cleaners are usually composed of a large percentage of abrasive, some mineral oil to lubricate the abrasive action, a substantial amount of petroleum distillate to loosen grease, emulsifying agents, and water as a vehicle. Tripoli is the most commonly used abrasive, although some cleaners contain decomposed amorphous silica. Tripoli is well adapted for this purpose because, although it is more harsh than diatomaceous earth, it tends to be friable and breaks down on continued rubbing. Since there is no problem of polishing involved when these cleaners are used, soap can be and is used as the emulsifying agent. Colloidal clays are frequently employed to keep the abrasive in permanent dispersion.

Paste Type Cleaners

The paste type cleaners or rubbing compounds differ from the liquid type only in that they contain less water and other liquids. Tripoli is almost universally used as the abrasive in the paste cleaners. Various waxes are incorporated in the paste products to give firmness or body to them. A not uncommon trouble with rubbing compounds is the bleeding of liquid to the top and sides of the container. The proper choice of emulsifying agents will overcome this fault.

The choice in using a paste or liquid type cleaner is one of individual opinion for the automobile owner. With the manufacturer or refinisher, where a buffing wheel is used the liquid type is not well adapted. It is, in this case, much easier and more economical to use a paste compound. Manufacturers of paste cleaners specify in the directions for use that a cloth wet with water should be used in applying them. Car owners often do not heed these directions and find great difficulty in spreading the paste over an area of reasonable size. This feature of paste cleaners has probably had a great influence in popularizing road haze removers.

A surface which has been treated with wax and polished up will retain its lustre much longer and provide better and more permanent protection than a surface treated with a polish of the ordinary type. One serious drawback to the use of wax is that much more effort is required to buff the surface and produce the desired gloss.

The use of wax for preserving and enhancing finishes antedates the horseless carriage. Waxes were used on carriages, floors and furniture many years before the first automobile was built. Since the development of the automobile industry, however, the use of wax for this purpose has increased greatly. This is not due entirely to the automobile.

Previous to the use of a polishing wax on an automobile surface it is essential to clean that surface thoroughly. Rubbing compounds, road haze removers and cleaner-polishes as well, are used for that purpose.

The majority of the polishing waxes used on automobiles are of the paste type. A few liquid wax preparations are sold as automobile waxes, but the majority of so-called liquid wax polishes do not contain wax. They are in fact cleaner-polishes. Floor waxes, both paste and liquid type, can be used to wax an automobile surface. Usually auto waxes are slightly different in composition from floor waxes in order to allow for the more rapid evaporation of solvent out of doors. In applying wax, use as little as possible and spread it over a large area. Only a superficial film of wax remains when the surface is buffed to a high lustre. If an excess is applied it takes more effort to rub off that excess in order to produce the polished surface. Since considerable effort is required under the best conditions it is rather important to avoid the application of an excess.

Paste polishing waxes consist of a crystallized gel of waxes in a vehicle of mineral thinner or mineral thinner and turpentine. They are made by heating the wax and vehicle together until the former completely dissolves and then allowing the solution to cool under conditions which will give the proper texture. The waxes used include Carnauba, Candelilla and other true waxes with Ozokerite, paraffin, ceresin, etc. The proper balance of hard and soft wax and of low boiling and high boiling solvent must be kept in order to get satisfactory application and ease of buffing in the final product. A difficult problem encountered in making these waxes is that of texture. Unless conditions are controlled during the cooling of the hot wax a grainy or sandy structure rather than a smooth "waxy" structure results.

Many compositions have been devised to clean and wax automobile surfaces in the same operation. Fundamentally, this idea is wrong. Dirt and dead lacquer cannot be removed and wax applied at the same time. If this is attempted the result is a film of wax containing dirt. There is another difficulty involved in making a liquid cleaner-polishing wax. If sufficient wax to be of any value is used, the film remaining on the surface becomes difficult to buff. Cleaner-polishes are used because they require less effort. If a liquid cleaner-wax requires as much effort as a wax and still will not do as good a job, obviously there is no market for it.

The advantages of a wax finish are durability, permanence of lustre, and ease of restoring the lustre. A waxed surface coated with dust can be restored by the simple process of going over it with a dry cloth. A surface polished with oil, on the other hand, becomes dulled by excessive rubbing. There are various inexplicable fluctuations, from year to year, in the relative demand for waxes and for cleaner-polishes.

A favorite method of testing whether a finish is non-greasy or "dry" is by running the fingers over it to see whether it will finger-mark. The results obtained depend more on the individual than on the polish. Aside from possible lack of cleanliness of the individual's fingers at that moment, the palm of the hand and finger-tips apparently perspire more than the back of the hand. If the polish can be streaked by rubbing the knuckles over it when the hands are clean, then it is reasonable to believe that not all of the oil has been properly removed from the surface being polished. It does not indicate whether the oil is too viscous or whether the surface has not been properly rubbed up.

Manufacturers frequently use amyl acetate to give an odor. Some users refer to it as a lacquer remover and therefore shun the product containing a fraction of one per cent. of it on the ground that it will remove the lacquer from their car. Actually it has little, if any, effect on the lacquer.

A constant problem of the polish manufacturer is an occasional "under-done" finish put on the market. These finishes will be of such quality that they cannot be satisfactorily polished with any type of oil polish or cleaner-polish. The trouble is usually encountered with fenders and usually with a single series of a make of car. When it does occur the polish manufacturer receives more criticism of his product from the owners of that particular series of cars than he does praise from all the other users of all the other types. There has not been an instance of one of these series of "under-done" finishes for the past two years and it is hoped that the motor manufacturers now have their production problems so thoroughly solved so far as finishes are concerned, that it will not occur again.

Salt Production '33

Salt produced for sale or use by operators of salt mines, wells, and ponds in the U. S. in 1933 totaled 7,604,972 short tons, valued at $22,318,086, an increase of 19 per cent. in quantity and 12 per cent. in value compared with 1932. The output of evaporated salt in 1933 (2,358,954 tons valued at $15,064,491) represented 31 per cent. of the total quantity of salt produced, and increased 15 per cent. in quantity and 12 per cent. in value compared with 1932. The salt content (3,461,026 tons) of the brine produced and used by producers in the manufacture of chemicals represented 46 per cent. of the total salt output and an increase of 25 per cent. in quantity. Rock salt produced (1,784,922 tons valued at $5,570,352) represented 23 per cent. of the total output, an increase of 13 per cent. in quantity and 9 per cent. in value. The average value of all salt in 1933, $2.93 a short ton, was 18 cents less than in 1932; that of evaporated salt, including pressed blocks from evaporated salt, was $6.39, 17 cents less than in 1932; and that of rock salt was $3.12, 10 cents less than in 1932.

New Subjects for Today's Research

By Sir Harry McGowan

Imperial Chemical Industries, Ltd.

THE main branches of our industry are so inseparably bound up with chemical theory and practice that it is only natural that chemical manufacturers should have undertaken intensive research, because it is so obviously to their profit to do so. The chemical industry has been so intimately connected with the science of chemistry that it is not easy to separate academic and industrial research.

It is when we come to some of the more general operations of life which do not have an academic or industrial background that we are at once struck with the empirical state of knowledge existing therein. Let us take, for example, that necessary but humble adjunct of life—cooking. It is doubtful whether even to-day it is possible to obtain a better meal than could have been obtained years ago, although the general standard of life for the masses has risen enormously, and we have a far greater supply of food, especially seasonable food, on which to draw.

Cookery still remains a traditional art. It has not yet seriously been considered from the engineering point of view. The chemistry of cookery is practically untouched. At the present moment there is not much possibility of a serious attack being made on the reformation of cooking; nevertheless, I would venture to suggest to you that within the next 50 years we shall see a revolution in the ordinary household methods of handling food, which will make our grandchildren wonder at the elementary way in which we prepare and use our food.

There is a certain difficulty in discussing the inequality of research effort, because it nearly always gives rise to the idea that some industries are more scientific, more enterprising, than others, and this carries with it a kind of implied slur. In fact, this is not the case. I will go so far as to say that if in our industry we had not been so obviously and intimately concerned with the science of chemistry, we should probably be in the same state as some of the so-called backward industries are, especially those in which the scientific approach to current procedure is so extraordinarily different and complex.

Some of the problems which I am going to mention —with all the good will in the world—offer great difficulties in making a start.

It should be realized that research in some industries is a profession. In our industry, for example, and in the physical industries, research is known to offer careers to young men. In other branches of industry, however, where science is what might be called one stage removed from practice, there is little demand for such young people, and the consequence is that although the number of candidates coming forward is doubtless roughly proportional to the demand, that number is nothing like sufficient for what ought to be done considering the magnitude of the issues involved.

Let me give a few examples at random.

It is recognized on all hands that railways and self-propelled vehicles have revolutionized the world, and that one of the great differences between the life we lead to-day and that of our ancestors is the speed at which we can get about. It is not so easy to say, however, what branch or branches of science are directly concerned in the traction industry, although it is obvious that physics and chemistry are indirectly concerned.

Nevertheless, it may be fairly argued that we are rather too apt nowadays to give ourselves a pat on the back in connection with speed. Take the speed on railways, for example. Do any of the modern trains (I know they pull a bigger load)—but do any of the modern trains touch the speed attained in the famous railway races of 40 years ago?

Suppose that anyone wanted to go really fast—what would he do? Utopian, I admit. He would build a tube from, say, London to Edinburgh, run his train in vacuum, and attain any speed, within reason, he liked.

The speed of ships. We all know that miraculous old ship the *Mauretania* is only about two knots slower than the German Atlantic record-breaker. We all know that extra two knots is purchased at a tremendous price. Is it not possible that intensive research on engine efficiency, stream-lining, and the like would produce a ship which would make all our present efforts look rather foolish?

Why, for example, do ships have funnels, the trunks of which fill up valuable passenger space, and why in the name of fortune do ships have dummy funnels? This seems to me the last word in conventional technical inefficiency.

Do we spend enough on research in the traction industry? If not, it may be due to the fact that on the whole this industry has produced such great results that it is not to be wondered that a certain contentment has arisen.

Research on Accidents

On the other hand, speed and accessibility have brought with them some disturbing factors. Every week in this country we kill about 150 people, and injure several thousands on the roads. There is naturally a great public outcry about this. You will find many schools of thought trying to explain causes.

Let us consider a few well-known facts. In London, taxi drivers kill about eight people a quarter. Is this because a taximan can see the road in front of him, or is it that their average pace is slower, or what?

Has anyone ever tried to correlate the incidence of accidents with the height of the driver's eyes above the ground level? There are certain well-known makes of cars, for example, in which, because of the long bonnet and the headlamps, the driver can only see the road about thirty yards in front of him. You will, I hope, see that what I am adumbrating is a much closer scientific inquiry into accidents than at present exists. Would it be too much to suggest an Accident Research Department, which, besides inquiring more closely than at present into the causes of accidents, would bend its energies towards designing a new and possibly, for the moment, weird-looking car, right away from conventional lines, to the end that a rational scientific self-propelled vehicle might be produced which would tend to lessen the present high rate of casualties?

Then we come to the question of engine efficiency. Everybody knows that machines producing power on the whole are comparatively inefficient. A number of devoted people are working away trying to improve matters, but I think you will agree with me that the amount of money which is being put into this is nothing like commensurate with the value of the industry and the savings which might be effected.

There is another branch of industry which is of immense financial importance and interest to everyone of us. I am referring to the great building industry. Much excellent work has already been done, but, nevertheless, I venture to predict to you that within some years we shall see a complete change in the methods of building construction.

There are already many new building materials in sight; new methods of making light, cheap, and sound-proof internal partitions; plastics and metals which will assist in them.

Building Improvements

Research leading to lighter and stronger building materials, to greater standardization, and, therefore, to decreased time and cost of construction, must mean the provision of more houses in a given time and at a price within the reach of the poorest members of society. It is the housing and re-housing of the poorer elements of the population which constitutes one of our greatest problems, and I am confident that research has in this field a more immediate national part to play than almost any other.

One of the results of new materials and processes will be houses which will not be liable to harbour that loathly insect, the bed bug, which is in these enlightened days so little talked about that many people are unaware of its existence. I am credibly informed that no less than four million people in London are living to-day within the possibilities of attack from these insects. It is not difficult to see why they have not received greater publicity, for there exists the queer idea that they are in some way associated with social status. This is not so, for anyone, living in any house at any rent, is liable to become a victim. The whole problem in getting rid of bugs is to avoid cracks and crevices of every kind, whether in the furniture, floors, or walls. If you can utilize materials which are not liable to crack, this age-long pest is bound in time to disappear. Or if at any time it happens to reappear, it can then easily be dealt with by well-known chemical methods.

Then we have the problem of ventilation. What do we really know about fresh air? Air conditioning has in many ways made a revolution in ventilation, but we have not yet reached that stage of development when we can get real benefit out of a breath of air, such as one gets on arriving at the sea after a hard day's work. There is no doubt that as science progresses, we shall be able to have in our offices and homes, air of that quality which we usually associate with the sea.

Another example lies in the biological industries—fishing, agriculture, and the like. These industries present problems to the scientists of a far greater complexity and difficulty than those which confront the average chemist and physicist. It is an undeniable fact that the amount of work which is done in biology, using the word in its widest sense, is far smaller than that which is done in the comparatively simple sciences.

Food and vitamins also call for our attention. Here we are making a good deal of progress, but our efforts are on a comparatively small scale. The consequences of a really intimate knowledge of food values are incalculable to the future of the human race. Suppose that every man, woman, and child in this country had access to really good food, in the best sense of the word, and that the art of cooking was well known, instead of having, say, a 50% rejection of recruits for the army, we should probably get a 10% rejection, and automatically attain a great increase in the physical fitness and happiness of our population.

The metallurgical industries also have not received anything like the intensive consideration they deserve. It is common knowledge that the theoretical strength of metals like steel is far above that which can be attained in practice. Future intensive research will not compel us to have factors of safety four- or five-fold like we are compelled to use at present. The amount of money expended on metallurgical research is disproportionate to the value of the industry.

Research Should Provide Maximum of Efficiency

Now you are entitled to say that my remarks are all very well in their way, and to put to me the famous question—what would you do? First, I think we have to remember that this country has recently undertaken a fiscal revolution. From almost every aspect the State is brought into closer relation with the industrial structure. Through indirect taxation on the one hand, and, in certain cases, through the grant of subsidies on the other hand, those responsible for the national welfare can say that they are caring for industry. It is not inappropriate that in return they should be entitled to ask for the maximum of industrial efficiency and, going further, to suggest that a greater efficiency can only spring from additional knowledge which must be based upon an extension of research.

Still pursuing the voluntary idea, the nation may expect that additional activity to arise spontaneously in the industries concerned. You may still, however, repeat your question—what would you do if that hope were disappointed? At that point serious issues arise. Shall we be forced to go in for what might be called paternalism? In other words, is the State to say to an industry "We know the possibilities of your work and we must insist that you spend more in investigating the underlying facts of the processes you employ?" Is it to say "For this purpose we propose to set up within your industry an organization drawn partly from your members and partly from other sources, on which we shall impose the duty of research?" That organization would need funds for its work, and it is conceivable that they might be drawn from the industry on the basis of a levy of so much in respect of each quantitative unit.

There are not wanting precedents in this respect. You will remember that under the Cotton Industry Act of 1923, every cotton spinner in respect of every purchase of raw cotton pays a small levy for the purpose of encouraging the growing of Empire cotton.

You will also recollect that there is a Miners' Welfare Fund which undertakes many duties within that wide field and gathers its resources by means of an output levy of one penny per ton on coal raised, fortified by a levy on coal royalties.

Industrialists are trustees not only for their shareholders, but for their workers; not only the prosperity of an industry, but its stability over a long period of years, rests ultimately on keeping level with the general front of research.

All research organizations, private or public, must recognize that in some directions they will lose money. No one can back a winner every time! Every original idea that shows some chance of success must be pursued. Consistent organized studies in the field of research, while they may be sometimes disappointing because an objective is not reached, often throw up incidental facts and phenomena of great value in other directions. We all realize that many of the great discoveries of the past have had something of an accidental touch.

We should frankly recognize that although we all pretend to be logical, the conduct of our life is in effect largely emotional, and we should try deliberately to avoid this. It should not be necessary, for example, to put into practice a dramatic piece of realism like that with which the late Sir Charles Parsons succeeding in forcing his little turbine ship on the attention of the authorities by his display in the Naval Review in 1897. It caught the public imagination, but this procedure should not be necessary.

Future Expansion

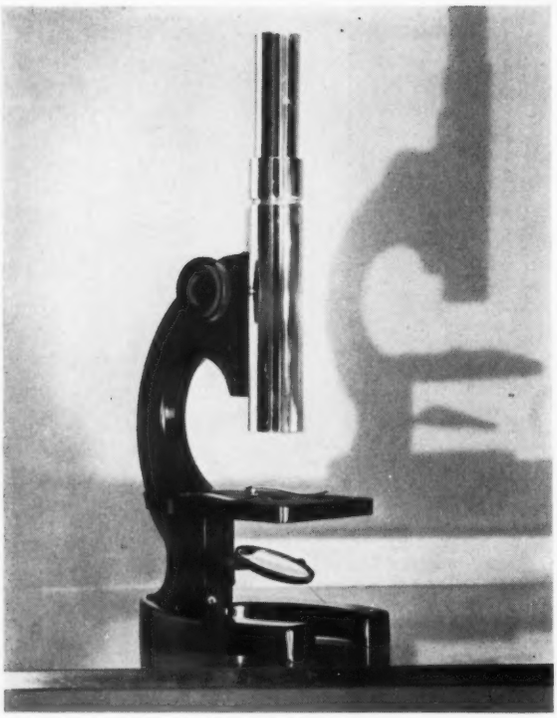
To sum up, I would say that we should all recognize that owing to one cause or another, some industries have prosecuted research with far greater insistence than others, and that those which have not prosecuted research so intensively are not blameworthy, because the difficulties which they have had in appreciating future benefits have been far greater than those which have beset their more fortunate brethren. We should always try to realize that once a process is going, generally speaking, it is not a difficult matter to understand it in commonsense, commonplace terms, and that we should try and think our way into everything which we do, to a certain extent, and not leave it to those mysterious creatures called experts.

I look forward with confidence to a future in which those in control will have a reasonable idea of what is going on on the technical side, and will realize to the full that every new idea in the past has had to struggle for recognition and the mere knowledge that there are such difficulties will be the cause of special precautions so that such a state of affairs shall not arise again.

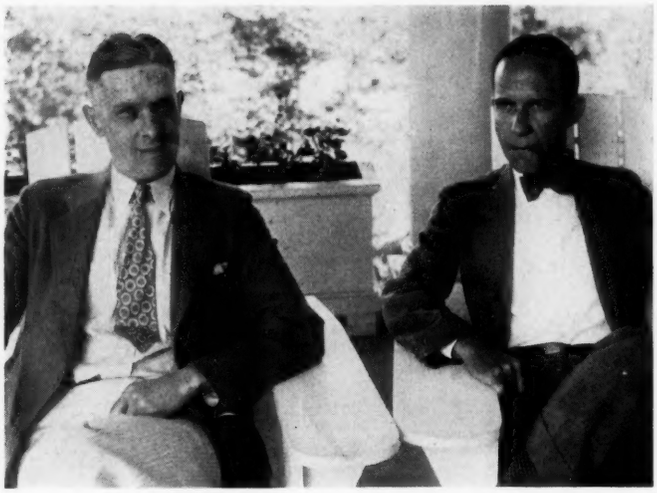
Geared to meet modern industrial chemical requirements

CHEMICAL

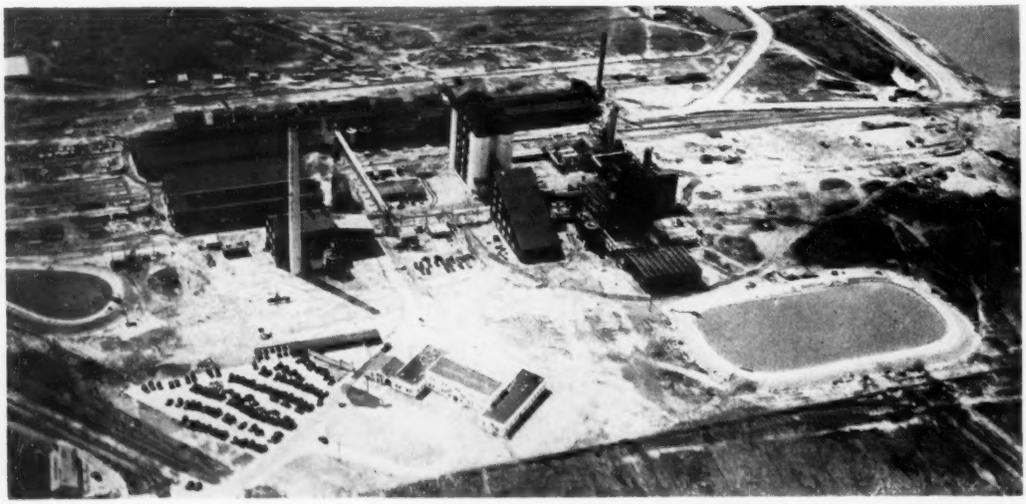
The Photographic Record



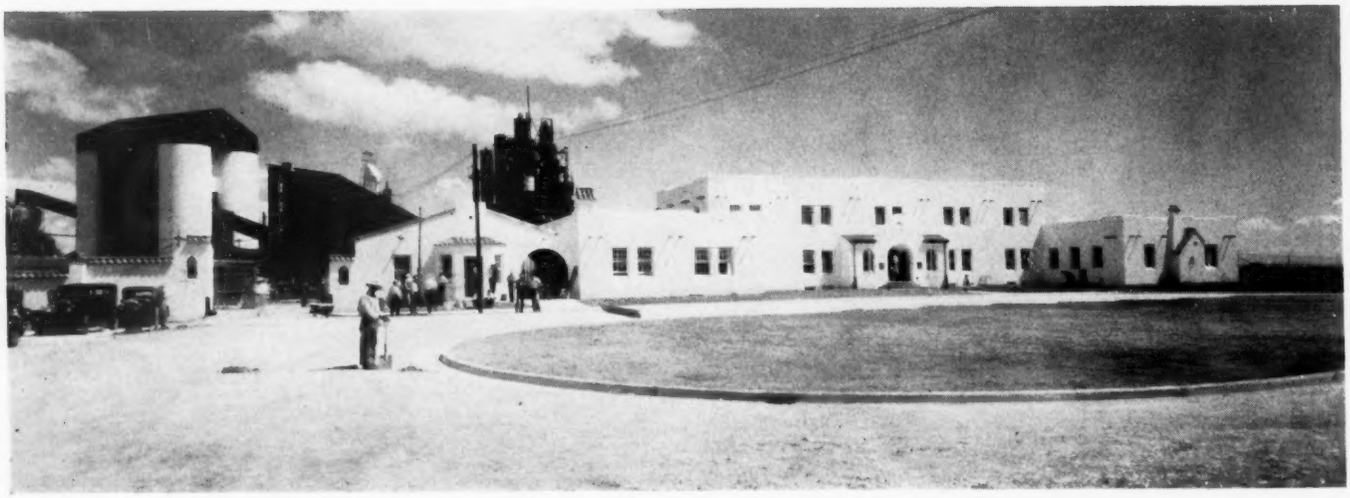
Utility and beauty, as well as lightness and durability, are added to the latest Bausch and Lomb microscope. Accomplished through the use of a Bakelite Molded base.



Two chemical tariff experts, apt to work overtime this winter if Uncle Sam goes bargaining. Left, Dexter North and right, Wilbur F. Sterling.



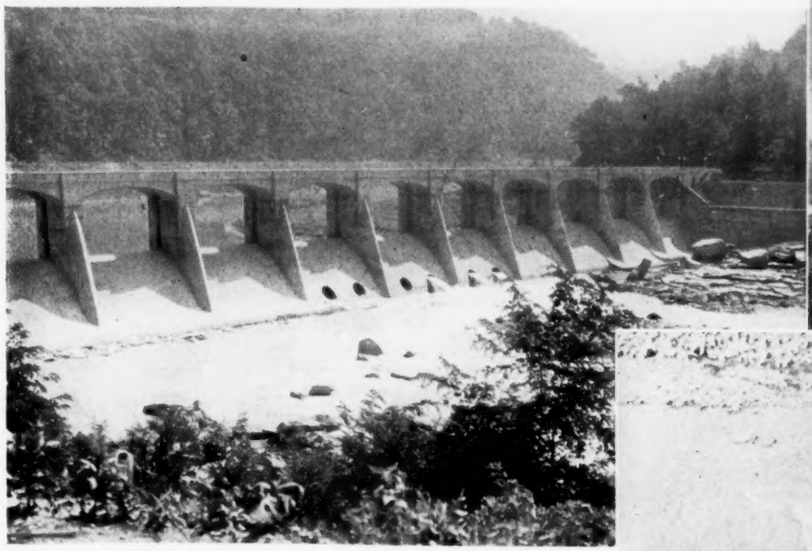
First of the new alkali plants on the Gulfcoast to come into actual production. Bird's-eye view of the Corpus Christi operation of the Southern Alkali Corporation, and below, their very attractive Spanish style offices, showing in background storage and shipping building, calcining building, and distillation and absorption equipment.



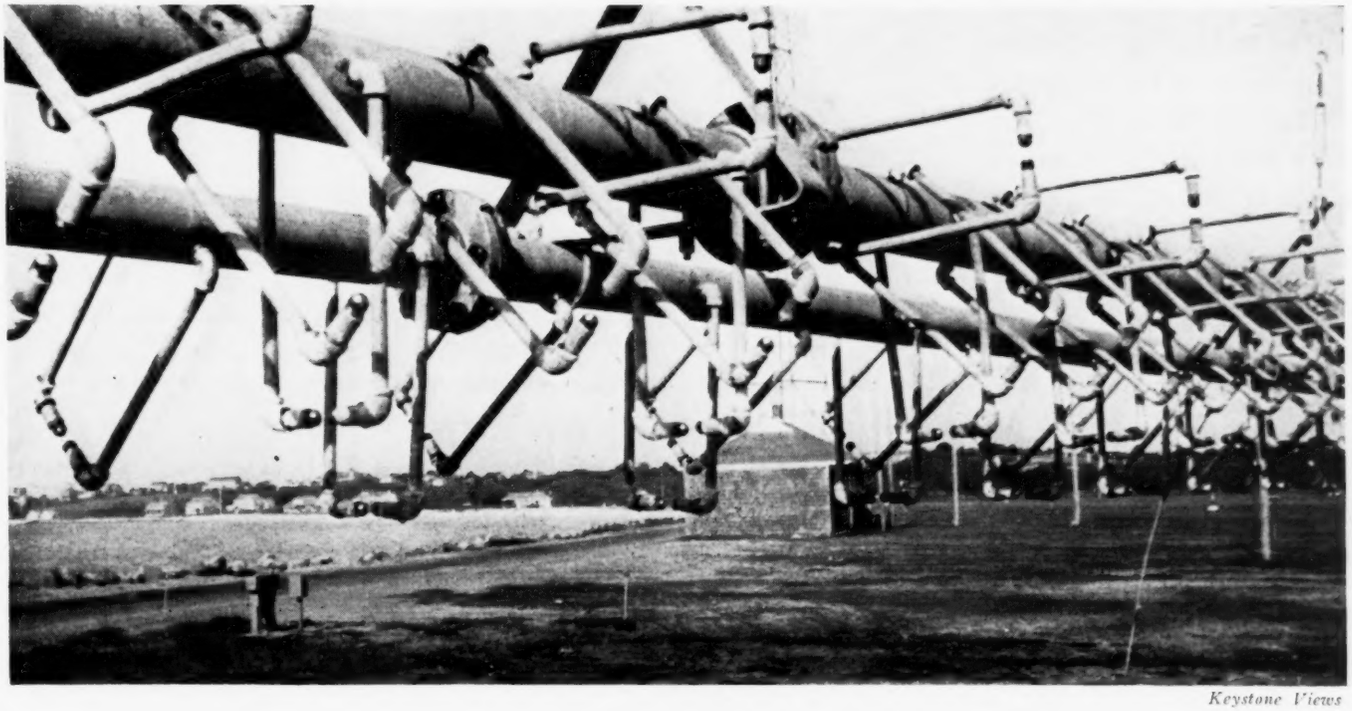
NEWS REEL

of Our Chemical Activities

The Hawks Nest power dam of Carbide & Carbon, where a three mile tunnel cuts off eight winding miles of a New River Gorge. Right, and below, this is the river which the Government is claiming to be a navigable stream, though it has floated nothing bigger than a canoe, and the rights from West Virginia to dam it have been held by the Corporation for more than a quarter of a century.



Considerable pipe line, this. It looks like a boy's Tinker Toy, but it's claimed to be a machine to dispel the fogs. No, the installation was made at Round Hill, Massachusetts, not in the District of Columbia. Designed by Henry C. Houghton, Jr., member of the Massachusetts Institute of Technology staff.



Keystone Views

SOUTHERN ALKALI

Announces the opening of

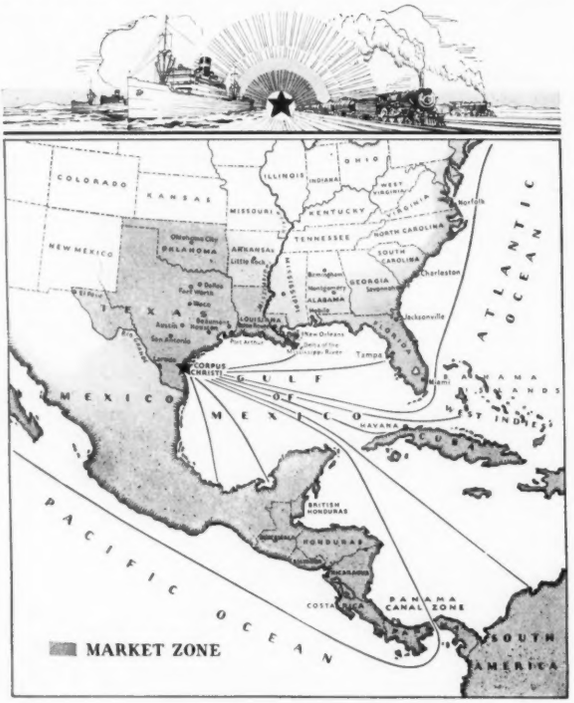
THE FIRST ALKALI PLANT IN THE FAR SOUTH

THE pioneer alkali plant in the far South is completed. After three years of extensive planning and building, Southern Alkali begins production during September.

This event is significant for the alkali consuming industries of the South. It establishes a convenient home supply of basic alkalies for oil refineries, soap factories, paper mills, glass factories and other users who will thus benefit from quicker deliveries, more advantageous freight rates.

Our plant at Corpus Christi is an ideally co-ordinated traffic center. Located on tidewater, Southern Alkali has its own port for accommodating deep water vessels, and for handling coast-wise and export shipping. Three railroad trunk lines bring the plant within quick, easy access of mid-continent points. Southern Alkali's alert, fully equipped Traffic Department will enable customers to realize these advantages to the full.

LOCATION AND MARKET



New as Southern Alkali is, the men behind it are men of long experience in the alkali field. They start operation with a sound, diversified background in the production and handling of basic alkalies and the application of these products in various industries.

From every standpoint then—construction, equipment and organization—this new plant is designed to maintain the highest standards of quality and service.

At the same time convenient sources of raw materials and an abundant supply of low-cost power make possible distinct production economies for the consumer's benefit.

Southern Alkali is ready now to meet your alkali requirements—whether large or small—for uniform, dependable quality.

We will gladly co-operate with you by giving our closest attention to your inquiry when you write, phone or wire for full information.

SODA ASH - CAUSTIC SODA - LIQUID CAUSTIC SODA - MODIFIED SODAS - CAUSTIC ASH

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Chemical Consumption

A digest of new products and processes in process industries for the user of chemicals.

Oxidized China Wood Oil

By Dr. Felix Fritz

IT is now common practice to improve China wood oil by bodying it at high temperatures. Other processes to make this oil suitable for use in paints and varnishes are known but practiced only infrequently. One of the most noteworthy processes, which has been successfully employed in large scale production of wood oil products for a number of years, is the treatment of the oil with air.

When wood oil is blown at 40 to 50° C. in the absence of drying metals it solidifies after about 100 hours, yielding a hard mass which can be readily powdered. This experiment shows that certain precautions must be observed when cold blowing wood oil the same as when kettle bodying it if an undesirable end product is to be avoided. Nevertheless, the treatment of this oil with air is less difficult than polymerizing it at high temperatures, and this process can therefore be practiced easily. In the many years the writer has used this method of preparing bodied wood oil it has not happened that a batch was lost by overblowing and solidification.

For large scale production, about one thousand pounds of wood oil are given into a stationary kettle equipped with a horizontal paddle stirrer. This kettle is so constructed that it can either be heated or cooled by passing steam or cold water through a jacket. The stirring arrangement is started and the oil is heated to 100° C. The stirrer rotates at a speed of 120 RPM and beats the oil to a foam thus increasing considerably the air interface and giving the air oxygen a chance to act quickly and most efficiently upon the oil. Driers are not added.

After about six hours, the oil will reach a specific gravity of 0.962 at 22° C. This oil when spread out in a thin film will not be entirely gas proof, but when thinned with turpentine and an extremely thin film is applied it will dry without wrinkling. Raw China wood oil applied under the same conditions dried to a very matte film. Up to thirty per cent. of this blown wood oil could be added to a blown lead treated linseed oil without causing any wrinkling. Higher concentrations were not gas proof.

The blown leaded linseed oil was prepared by heating linseed oil and 2% of litharge to 200° C and blowing it with air for a period of seven hours.

The above experiments show that blowing of wood oil for six hours is not sufficient. Increasing the blowing time to 16 hours at 110° C yields a bodied oil having a specific gravity of 0.984 which was found to be entirely satisfactory. To control this process it is advisable to take samples of the oil at regular intervals during the treatment and determine their specific gravities. The process is interrupted as soon as the gravity of the oil has increased to 0.984.

In order to avoid solidification of the finished product it is necessary to provide for rapid and efficient cooling.

This heavy bodied but still very light colored wood oil is blended with boiled linseed oil for use in the manufacture of printing inks for linoleum. Since these inks are usually applied in fairly thick layers it is necessary to carry the oxidations of the wood oil far enough to ensure a glossy film. The oil described above yielded glossy films only when applied in thin films but its blends with linseed oil were entirely satisfactory.

This oil can be used to great advantage in the manufacture of linoleum.—*Paint and Varnish Production Manager.*

Agricultural Chemicals

Cyanamid Controls Nematodes

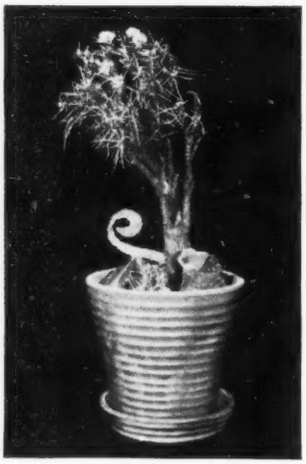
In experiments conducted by the Florida Experiment Station and reported in *The Fertilizer Review* it has been shown that proper use of cyanamid will control the nematode which causes root-knot disease, a serious handicap to truck growing in Florida on land continuously under cultivation.

Briefly, the method consists in applying 1,000 lbs. of cyanamid to the acre, mixing it thoroughly with the soil, irrigating if possible and waiting 30 days before planting the crop. If it is not possible to irrigate, the cyanamid should be applied during the rainy season. In the case of transplanted crops, plants from nematode free beds should be used. Beds should be treated with 1,500 to 2,000 lbs. of cyanamid per acre and allowed to stand from 45 to 60 days before seeding. The general rule is to wait three days for each 100 pounds of cyanamid used.

Do you use *Gums?*

ARABIC · KARAYA · TRAGACANTH ... *for Printing, Finishing, etc.*

The Story of Gum Tragacanth

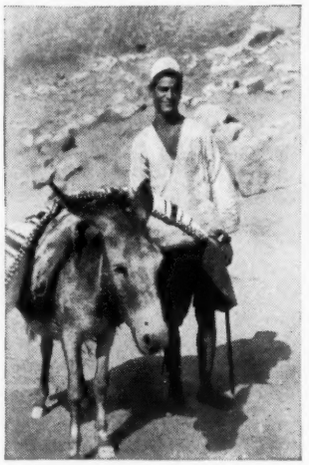


1. Tragacanth Gum Bush.

2. Mountainous regions of Persia in which the gum is gathered. Only sand, rocks and the Tragacanth shrubs from 1 foot to 2 feet high.

5. Sorting into grades. Wages 1 Kran (about 6¢) per day.

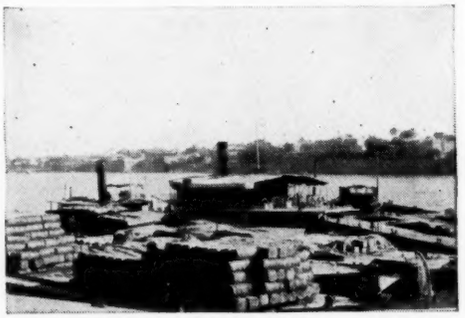
3. Tapping the shrub. The rocks, etc., must be dug away to expose the stem—which is then slit with a sharp knife to let the gum ooze out.



4. Bringing the gum down from the mountains. Only small donkeys or camels can be used.

6. Weighing and packing in cases.

7. On its way to the coast. Once more on donkey or camel back.



8. The final stage, in the river steamers bound for the port, thence on its final journey to London, Marseilles or New York.

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Textiles

Month's New Dyes

General Dyestuff has added the following new dyes; Palatine Fast Orange RN, a new brand of the Palatine Fast color series. It is very level dyeing and espècially recommended as a shading color for combination shades. Possesses the very good solubility required for machine dyeing. Palatine Fast Brown GRN, product the Palatine Fast range also, possesses very good fastness properties. Indanthren Olive T Powder, fine for dyeing, does not change its shade as much as Indanthren Olive RAP when spotted with water. Due to its good solubility, it is also suitable for machine dyeing. Diazo Sky Blue 3GLA, when dyed in the usual way for direct dyestuffs from a salt or Glauber's salt bath, and diazotized and developed with Beta Naphthol, produces at comparatively low cost a bright greenish blue of good fastness to light and washing, which may be discharged to a clean white with Rongalite C.

Coagulation of Gum Arabic

The phenomenon of coagulation of different kinds of Gum Arabic by the action of some metallic salts, notably ferric, is well known to those engaged in the printing of textiles. Some tests recently carried out, and described in *Textilberichte,* March '34, show that coagulation can be prevented by adding formic acid or acetic acid to the solution of gum containing ferric salts. Evaporation of the acids will result in renewed coagulation. Indigoid vat colors were used for the tests based on these observations.

The white bleached goods were printed with:

(1) 100 g Ciba Brilliant Red R.
550 g Kordofan Gum 1 : 1.
200 g acetic acid 40 per cent.
100 g ferric chloride solution, 10 per cent.
50 g water.

1,000 g

(2) 100 g Ciba Blue 2 BD.
550 g Kordofan Gum 1 : 1.
200 g acetic acid 40 per cent.
100 g ferric chloride solution, 10 per cent.
50 g water.

1,000 g

The printed goods were well dried and then impregnated on the Foulard machine with:

100 g Ciba Hydrosulphite R conc.
120 g potash.
15 g solution salt B.
75 g glycerine.
200 g Tragacanth.
500 g water.

1,000 g

Dry well after foularding, steam 4 to 5 minutes in the kier boiler, scour in cold water, acidify with 10 c.c. sulphuric acid per litre (hand warm), scour and spray while boiling.

Patents—Textile

An artificial thread having a normal luster, which luster can be reduced by chemical treatment. No. 1,966,578. Van L. Bohnson and Fenton H. Swezey, Waynesboro, Va., to du Pont Rayon Co., N. Y. City.

Bleaching with hydrogen peroxide contained in an organic solvent not attacked by active oxygen. No. 1,966,915. Hermann Baier, Frankfort-am-Main, Germany, to Deutsche Gold & Silber Scheideanstalt vormals, Roessler, Frankfort-am-Main, Germany.

Process for weighting silk. No. 1,966,991. Frederick W. Miller, Belleville, N. J., to Harold E. Kampf, N. Y. City.

Manufacture of artificial silk from a cellulosic solution containing casein, turpentine and petrolatum in emulsion. No. 1,967,206. Gustav Hardt, Elizabethton, Tenn., to American Bemburg Corp., N. Y. City.

Wetting and dispersing agent. No. 1,967,656. Heinrich Bertsch, Chemnitz, Germany, to H. Th. Bohme Aktiengesellschaft, Chemnitz, Germany.

Wet treatment of artificial silk cakes. No. 1,968,356. Kurt Schmidt, Elberfeld, Grenze, Germany, to North American Rayon Corp., Wilmington, Del.

Mercerization and purification of cellulose fibre. No. 1,968,468. Milton O. Schur and Benjamin G. Hoos, Berlin, N. H., to the Brown Co., Berlin, N. H.

Production of sulfuric ester of higher alcohols. No. 1,968,793. Heinrich Bertsch, Chemnitz, Germany, to American Hyalsol Corp., Wilmington, Del.

Process of making sulfuric reaction products of aliphatic alcohols. No. 1,968,794. Heinrich Bertsch, Chemnitz, Germany, to American Hyalsol Corp., Wilmington, Del.

Method of producing textile wetting agent. No. 1,968,795; also No. 1,968,796; also No. 1,968,797. Heinrich Bertsch, Chemnitz, Germany, to American Hyalsol Corp., Wilmington, Del.

Paper

New Casein Process Aids Paper Industry

Development of a new machine manufacturing casein from skimmed milk in one continuous process is described in a recent report to the A. C. S. In the new process, developed by F. L. Chappell of Hobart, N. Y., the milk is run through rapidly in ribbon-like streams, each step being accomplished by an unerring machine. Acid is mixed instantaneously and uniformly with the milk in a small stoneware cylinder containing baffles. Precipitation of "foreign" proteins is prevented by controlling the degree of acidity at all times. In other units of the machine the curd is separated from the whey, all soluble impurities washed out, and the casein continuously pressed to prevent formation of large masses. Prompt drying removes moisture and acid from the particles of casein, which are ground to the necessary fineness. Hydrochloric acid is used, since it precipitates casein low in ash content.

Patents—Cellulose

Method of utilizing purified musa fiber cellulose. No. 1,966,475. Edward Chauncey Worden, 1st, Millburn Township, N. J., to Hanson & Orth., N. Y. City.

Method of preparing a mixture of a plurality of cellulose acetates, each with different characteristics. No. 1,966,579. Van L. Bohnson, Waynesboro, Va., to du Pont Rayon Co., N. Y. City.

Process which comprises treating cellulose with polyricin-oleic acid chloride in the presence of a tertiary organic base. No. 1,966,757. Max Hagedorn, Dessau-in-Anhalt, Germany, to the I. G., Frankfort-am-Main, Germany.

Process for producing a cellulose of high content of alpha cellulose. No. 1,967,347. Alfons Bayerl, Dessau-in-Anhalt, Germany, to the I. G., Frankfort-am-Main, Germany.

Process of making cellulose esters, by heating cellulose with an organic acid anhydride and a tertiary amine base in the presence of one of a group of compounds consisting of ammonium and amine salts of halogen acids. No. 1,967,405. Joseph F. Haskens, Kenmore, and Ferdinand Schulze, Buffalo, N. Y., to du Pont Rayon Co., N. Y. City.

Process for purifying viscose solutions. No. 1,968,157. Waldemar O. Mitscherling, Bridgeport, Conn., to Pacific Lumber Co., Scotia, Calif.

Process of treating paper pulp. No. 1,968,223. Gotthard Rosen, Paris, France.

Method of treating sulfite pulp. No. 1,968,345. Harold R. Murdock, Canton, N. C., to the Champion Fibre Co., Canton, N. C.

Coatings

Ionium Salts as Paint Emulsifiers

Special colloidal properties, which assist in retaining the particles of the pigment longer in homogeneous suspension and increase the anti-corrosion resistance of the paint, may be given to the varnish, according to the patent of V. Donat (application 2785-33.) The pure linseed oil varnish with drier, containing no resins, is mixed with a maximum of 4 to 5 per cent. of beeswax. The mixture is then boiled down with 5 per cent. of the activator, consisting of the so-called soda precipitate—i. e., waste material from radium manufacture—containing 5 milligrams of ionium in one kilogram, and filtered. The paints are in industrial use. *Industrial and Engineering Chemistry,* July 20, '34.

Resin Identification

A simple test for identifying common resins by color was given recently in *Farben-Zeitung.* A sample of the resin is

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dissolved in acetic anhydride in a test tube, and a drop of concentrated sulfuric acid allowed to run down the wall of the tube into the cold solution and the immediate color change noted. This is allowed to stand for twelve minutes, then diluted with benzine or similar water-free solvent, and the color again noted. Resultant characteristic color reactions are given:—

Resin.	Solubility in Acetic Anhydride.	Color with Concentrated Sulphuric Acid. Immediately.	After 12 mins. (diluted).
Damar	d. Cloudy	Light red	Olive brown.
Shellac	e. Clear	Yellow	Yellow.
Accroides	e. Clear	Dark red	Reddish brown.
Manila	e. Clear	Dark brown	Olive brown.
Rosin	e. Clear	Purplish red	Brown.
Gutta percha	e. Cloudy	Red brown	Reddish brown.
Amberole	d. Cloudy	Purplish red	Olive brown.
Paramet ester	d. Cloudy	Purplish red	Olive brown.
Rezyl	e. Clear	Light orange	Light olive.

e stands for "easily soluble," and d for "difficultly soluble."

Patents—Coatings

Plastic material of vinyl resin together with basic stabilizing material. No. 1,966,856. Frazier Groff, Charleston, W. Va., to Carbide & Carbon Chemicals Corp., N. Y. City.

Method of accurately blending colors in oils and paints. No. 1,966,987. Daniel J. McCrudden, Jr., Philadelphia, Pa.

Method of coating an article with a thermoplastic material electrically. No. 1,967,031. Roger K. Lee, Highland Park, Mich., to the Chrysler Corp., Detroit, Mich.

A new product, a mixture comprising a chloroprene plastic polymer and a plastic, elastic reaction product of one molar proportion of an aromatic compound having the general formula R—C_6H_4—R′, wherein R and R′ each represent hydrogen or a saturated aliphatic hydrocarbon radical containing more than one carbon atom, with about one to three molar proportions of ethylene chloride. (2) Method of preventing scorching of a chloroprene plastic polymer comprising mixing therewith a plastic, elastic reaction product of one molar proportion of an aromatic compound having the general formula R—C_6H_4—R′, wherein R and R′ each represent hydrogen or a saturated aliphatic hydrocarbon radical containing more than one carbon atom, with about one to three molar proportions of ethylene chloride, and thereafter adding other compounding ingredients. No. 1,967,292. Louis J. de Holczer, Passaic, N. J., to N. Y. Belting & Packing Co., Passaic, N. J.

Plastic composition from a cellulose ester and a plasticizer. No. 1,967,421. Richard Muller, Mannheim, and Alfred Lubke, Mannheim-Waldhof, Germany, to C. F. Boehringer & Soehne G.m.b.H., Mannheim, Waldhof, Germany.

Process for the manufacture of leather substitutes. No. 1,967,520. James G. Grower, Watertown, Mass., to Respro, Inc., Cranston, R. I.

Coated material and method of making the same. No. 1,967,863. Arnold M. Collins and Louis L. Larson, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Paint vehicle for flaked pigments. No. 1,967,936. Horace Herbert Hopkins, Ridley Park, and John Richardson, Jr., Yeadon, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Coating composition containing a cellulose derivative, a resinous polybasic acid ester of monoethylin, a softener and a solvent. No. 1,967,955. Walter E. Lawson, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method of producing artificial leather. No. 1,967,967. Max Nathan Nickowitz, Bridgeport, Conn., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process for preparing resin solutions. No. 1,968,074. Ernst Elbel and Fritz Seebach, Erkner, near Berlin, Germany, to Bakelite Gesellschaft mit Beschrankter Haftung, Berlin, Germany.

Artificial mass and process for making same. No. 1,968,080. Herbert Honel, Vienna, Austria, to Beck, Koller & Co., Detroit, Mich.

Process of preparing a protective coating composition. No. 1,968,243; also No. 1,968,244. Robert D. Bonney, Glen Ridge, and Walter S. Egge, East Orange, N. J., to Congoleum-Nairn, Inc., N. Y. City.

Process of making a lacquer containing phenol-formaldehyde resin. No. 1,968,440; also No. 1,968,441. Ernst Elbel and Fritz Seebach, Erkner, near Berlin, Germany, to Bakelite Gesellschaft mit Beschrankter Haftung, Berlin, Germany.

Sulfide plastic. No. 1,964,725. Carleton Ellis, to Ellis-Foster Co., Montclair, N. J.

Artificial resins, urea & formaldehyde condensation product. No. 1,963,762. Pungs, Eisenmann, Scholz & Kollmann, to I.G.F., Frankfort.

Acid resin-phthalide dye-colored cellulosic composition. No. 1,962,774. A. O. Jaeger, to The Selden Co., Pittsburgh, Pa.

Soap

Washing and Foaming Agents

When phosphoric acids or their anhydrides are reacted with mono- or di-saccharides and alcohols, washing and foaming agents are formed. British Patent 404,684 relates example of dextrose being warmed with a mixture of phosphoric acid, phosphorus pentoxide and lauryl alcohol; the product being separated from aqueous solution by the addition of butyl alcohol.

Restoring Rancid Fats and Oils

By treatment with aldehydic of ketonic reagents, such as hydroxylamine, semicarbazide, etc., followed by filtering, rancid oils and fats may be restored. German Patent 592,972.

Patents—Detergents

Detergent for metal surfaces containing trisodium phosphate, sulfonic acid derivative of an alkylated aromatic hydrocarbon. No. 1,967,394. William S. Calcott, Penns Grove, N. J., and George Cheney, Newport, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Detergent for metal surfaces consisting of an alkali metal carbonate, a sulfonic acid derivative of an alkylated aromatic hydrocarbon and a solvent of the group amyl alcohol and cyclohexal. No. 1,967,393. William S. Calcott, Penns Grove, N. J., and Gorge Cheney, Newport, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Manufacture of detergents. No. 1,968,752; also No. 1,968,753. George S. Evans, Bronxville, N. Y., to Mathieson Alkali Wks., N. Y. City.

Patents—Soap

Process of producing powdered soap of low moisture content. No. 1,968,526. Benjamin Clayton, Sugerland, Tex., Walter B. Kerrick, Los Angeles, and Henry M. Stadt, Glendale, Calif., to Refining, Inc., Reno, Nev.

Powdered soap product. No. 1,968,628. William H. Alton, N. Y. City, to R. T. Vanderbilt Co., Inc., N. Y. City.

Miscellaneous

Paint and Cavity Filler for Trees

A plastic rubber tree cavity filler has been perfected as the result of experiments conducted by the Goodyear Tire & Rubber Company and the Akron, Ohio parks department. The filler readily adheres to the cavities or scars of damaged trees and prolongs their lives indefinitely. Supplementing the cement is a new tree paint for minor cuts and scars that may be used to cover cuts resulting from pruning and trimming.

Soap Basis for Oiling Roads

Soap as the basis of a new method for successfully oiling low cost dirt and gravel roads, has been reported to the American Chemical Society by the Missouri State Highway Department. A sample of soil treated with soap in addition to oil was shown to resist water for over a year, whereas the same soil merely oil-treated, slaked down in less than a day's time. This high protective effect, in some cases, was obtained with the use of as little oil as 3% of the weight of the dry soil along with 0.3% soap. Many hundreds of soil samples were experimented with in laboratory tests and it was found that the water resistance and tensile strength of the soil was highest when a soap solution was mixed with the oil. The most successful method of treatment for the experimental road is described as an "oil-soap emulsion." In the tests two distributing trucks, one filled with road oil and the other with an aqueous soap solution were coupled together. Both liquids were spread through separate spray bars, attached to the rear distributor and directed to spray on the same spot of the road surface, thereby forming the desired emulsion at that point.

Rivets in Dry Ice

An alloy must be brought to a certain molecular condition for best results, i. e., after heating, duralumin is aged to obtain full strength and hardness. Before this ageing takes place rivets should be set. It is now customary, in airplane manufacture, to heat rivets to 950° F, quench them in water, and pack in dry ice until needed—as much as two weeks later. Ageing sets in with normal temperatures.

Zinc Oxide in Lubricants

Lubricants (known as "Keenol" or "Keenolised") containing zinc oxide in colloidal form have been produced. The presence of the oxide makes the lubricant anodic to steel and creates an electrolytic couple which forms an adherent film on the contacting surface, thus preventing corrosion or

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pitting. Zinc definitely plates out and, penetrating the surface layers of the steel, produces a hard corrosion-resisting skin. Should this ultra-microscopical thickness be reduced owing to wear taking place due to slip, it is automatically built up again. *Chemical Trade Journal,* August 3, p. 80.

Double Glazed Windows

A revolutionary type of double glazed window, known as Thermopane, is said to substantially reduce heat loss through windows and to prevent frosting in cold weather. The product consists of two panes of glass so fitted to each window sash that it provides a dehydrated air space between and reduces the flow of heat and cold. It is said to have been applied successfully in solving problems of air conditioning, and is expected to have a widespread effect upon window construction in new homes and buildings.

Stearine Pitch for Roofing Board

Colored stearine pitch impregnating masses for roofing board are discussed by Dr. C. R. Platzman in the *Chemiker-Zeitung,* July 4. A typical recipe for a green mass comprises: hard stearine pitch (45 parts), soft stearine pitch (17), wool fat (5) and green chromium oxide (33). A bright red impregnating mass can be made by incorporating Gilsonite (25), medium-hard stearine pitch (25), wool fat pitch (20), and red oxide of iron (30). ***Chemical Age.***

Foundry Flux and Desulfurizing Agent

Sodium carbonate is useful over a range from 851 to 1450° as a flux and for reducing the S content of Cu, brass, bronze and cast iron in the cupola furnace, in which, because of the presence of silicious slag, such purification does not normally occur. Four-pound fused blocks for use in the cupola are now available. A special "granular ash" is also made for foundry use, which is economical because almost completely free from dust.—*Chemical Age.,* Met. Sect. 30, 23.

New Bonding Material

A product known as colloidal slurry has been announced by the Kraus Research Laboratory. The product, according to *Ceramic Industry,* is made by digesting Halloysite in the presence of a small percentage of asphalt base oil. Mixed with clays and other mineral matters it is claimed will correct many of their faults and through change in mixture and/or handling it can emphasize one characteristic over another. Is useful as a plasticizing agent and can be used to plasticize clays of low plasticity or alone as a bond. Claims made for it are:

1. Improves plasticity.
2. Acts as a lubricant for extruded wares.
3. Makes cast wares stronger.
4. Does not reduce the melting point.
5. Extends the vitrifaction range.
6. Improves firing behavior.
7. Reduces the cost of bonding agents.
8. Acts as a fixative in ceramic bodies.
9. Gives a better structure to fired bodies.
10. Adds great strength to both raw and fired bodies.
11. Is not glass-forming at high temperatures.
12. Has a low water dispersion.
13. Influences the uniformity of mixes.
14. Reduces the amount of bond necessary in mixes.

Producer says it is especially adapted to ceramic bodies requiring strong bond and high temperature resistance. When used to improve the bonding value of clays it also extends the vitrifaction range. The clay burns to density at a much lower temperature without impairing its refractoriness. It acts as a fixative for ceramic bodies tending to stabilize the behavior of mixes in the raw state and through the drying and firing periods, and, unlike Bentonite, it has a high melting point (3100° F.) and is not glass forming at high temperatures. One ton will impregnate from 3 to 30 tons of mineral matter depending upon the degree of plasticity desired. Its use is comparatively simple—diluted with water to the desired strength it is added to the slip or used in place of the mix water to temper the batches.

Forest Wood for Cattle Feed

Waste forest wood is convertible into animal feeding stuff with a maximum digestibility of 77 per cent. by a process developed by Schwalbe in the Eberswalde Wood Research Institute and particularly suitable for small scale operation. It involves mechanical treatment of the wood in an edge runner mill and simultaneous exposure to the partial hydrolyzing and swelling action of lactic acid. *Chemical Age.*

Patents—Miscellaneous

Rubber

Rubber preservative obtainable by reacting a sulfur halide and a tertiary amine having at least one aromatic substituent. No. 1,966,650. Robert L. Sibley, Nitro, W. Va., to Rubber Service Laboratories Co., Akron, Ohio.

Process for the manufacture of molded articles of spongy rubber using certain solvent. No. 1,966,818. Leslie Eric Howard, Streatham Hill, London, Eng.

Process for preparing a stable latex. (2) An aqueous emulsion of a substantially water-immiscible organic liquid having as an emulsifying agent a water-soluble salt of a polyhydric alcohol-polycarboxylic acid resin. No. 1,967,220. Harold James Barrett & George Lowrance Dorough, Wilmington, Del., to E. I. du Pont de Nemours & Co., Inc.

Method of preparing a latex adhesive. No. 1,967,639. Walter H. Wedger, Belmont, Mass., to Boston Blacking Chemical Co., Boston, Mass.

Process of making hard rubber dust. No. 1,967,809. Fayette Dudley Chittenden, Providence, R. I., to Revere Rubber Co., Providence, R. I.

Process of making an aqueous dispersion of rubber. No. 1,968,459. Harold L. Levin, Rutherford, N. J., to the Patents and Licensing Corp., N. Y. City.

Metals and Alloys

Method of forming an aluminum alloy containing a major portion of aluminum and also antimony and bismuth. No. 1,966,481. Pierre Berthelemy, Henry de Montby and Jean-Marie Pouvreau, Paris, France, to Societe Anonyme Francaise dite; Societe des Brevets Berthelemy de Montby, Paris, France.

Method of forming a homogeneous alloy of aluminum and lead with the former predominating. No. 1,966,480. Pierre Berthelemy, Henry de Montby and Jean-Marie Pouvreau, Paris, France, to Societe Anonyme Francaise dite; Societe des Brevets Berthelemy de Montby, Paris, France.

Process for hardening non-ferrous metals electrically. No. 1,966,496. Hal F. Fruth, Chicago, Ill., to Western Electric Co., N. Y. City.

Apparatus for recovering volatilizable metals, such as zinc, etc., by distillation. No. 1,966,627. Friedrich Johannsen and Arthur Leysner, Magdeburg, Germany, to Fried, Krupp Grusonwerk Aktiengesellschaft, Magdeburg-Buckau, Germany.

Process of refining lead-bismuth alloy through introduction of zinc, etc. No. 1,967,053. John James Fingland, Alexander Douglas Turnbull, and Peter Findlay McEntyre, Trail, British Columbia, Can., to Consolidated Mining & Smelting Co. of Canada, Montreal, Can.

Method of reducing zinciferrous materials. No. 1,967,274. George F. Weaton, Beaver, Pa., to St. Joseph Lead Co., Inc., N. Y. City.

Method of producing chromium alloys in carbons. No. 1,967,530. Ture Robert Haglund, Stockholm, Sweden.

Process for the production of magnesium. No. 1,967,550. Pierre Camescasse, Paris, France, to the Magnesium Production Co., Ltd., London, England.

Method of coating zinc base metals. No. 1,967,715. Willett C. Magruder, Jr., St. Louis, Mo., to Carter Carburetor Corp., St. Louis, Mo.

Method of chromium plating. No. 1,967,716. Henry Mahlstedt, Waterbury, Conn., to United Chromium, Inc., N. Y. City.

Method of preparing laminated metal. No. 1,967,754. Stephen Ingersoll, Chicago, Ill., to Ingersoll Steel and Disc Co., Chicago, Ill.

Chromium plating bath and method of making same. No. 1,967,789. Erwin Sohn, Louisville, Ky., and Edward D. Meanor, Sewickley, Pa., to Standard Sanitary Mfg. Co., Louisville, Ky.

Method of deoxidizing of nonferrous metals with zinc dust, red phosphorus and a binder. No. 1,967,810. Willi Claus, Berlin-Steglitz, Germany, to Ernst Brandus.

A hard alloy composed of a tantalum boride, and from 3 to 15% of an auxiliary metal of the iron group. No. 1,968,067. Clarence W. Balke, Highland Park, Ill., to Ramet Corp. of America, North Chicago, Ill.

Method of producing malleable aluminum alloy. No. 1,968,344. Karl Leo Meissner, Duren, Germany, to Burener Metallwerke Aktiengesellschaft, Duren, Germany.

Process for the recovery of zinc from oxidized zinc ores. No. 1,968,413. Walter Malkomes, Essen, Germany, to the Koppers Co. of Delaware, Pittsburgh, Pa.

Process for plating aluminum and its alloys. No. 1,968,483. Johannes Fischer, Berlin-Charlottenburg, Germany, to Siemens & Halske, Aktiengesellschaft, Siemensstadt, Berlin, Germany.

Chemical Specialties

Insecticide comprising pyrethrins and rotenone. No. 1,967,024. Stewart C. Fulton, Elizabeth, N. J., to Stanco, Inc.

An adhesive composition comprising non-acid latex free from ammonia or formaldehyde and containing hexamethylenetetramine. No. 1,967,336. Merwyn C. Teague, Jackson Heights, N. Y., to the Naugatuck Chemical Co., Naugatuck, Conn.

Process of disinfecting. No. 1,968,136. Henry A. Gardner, Washington, D. C.

Method of making ink remover. No. 1,968,304. Ralph H. McKee and Frederick A. Hessel.

A bactericide and fungicide consisting of salts of polyamines, partially acylated with high molecular acids. No. 1,968,341. Max Hartmann, Riehen, near Basel, and Hans Kagi, Basel, Switzerland, to Society of Chemical Industry, Basel, Switzerland.

Trade mark, "PYROLINA," disinfectant. No. 349,852. West Disinf. Co., Long Island City, N. Y.

Petroleum

Acid compound with sulfuric in treating hydrocarbon oils. No. 1,962,204. J. C. Morrell, to Univ. Oil Prods. Co., Chicago.

Mineral oil sulfonates in refining white petroleum. No. 1,960,828. W. T. Reddish & L. T. Myers, to The Twitchell Process Co., Cincinnati, O.

Treatment of hydrocarbon oils. No. 1,967,636. Charles C. Towne, Elizabeth, N. J., to the Texas Co., N. Y. City.

Process of conducting exothermic reactions of olefines with acids. No. 1,967,410. Gustav A. Kramer, Oakland, Calif., to Shell Development Co., San Francisco, Calif.

Process for the thermal decomposition of gaseous paraffin hydrocarbons. No. 1,967,269. Harold M. Smith, Peter Grandone, and Harry T. Rall, Bartlesville, Okla.

Treatment of hydro a bon oils. No. 1,967,173; also No. 1,967,174. Jacque C. Morrell and Gustav Egloff, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process for refining cracked hydrocarbon distillate. No. 1,967,172. Jacque C. Morrell, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Method of producing petroleum coke. No. 1,966,801. George R. Lord, Pelham Manor, N. Y., to Sinclair Refining Co., N. Y. City.

Process of joint hydrogenolysis and methanolysis. No. 1,966,790. Carleton Ellis, Montclair, N. J., to Standard I. G. Co., N. Y. City.

Apparatus for distilling hydrocarbon oil. No. 1,966,746. Robert E. Wilson, Chicago, Ill., to Standard Oil Co., Whiting, Ind.

A process of revivifying a water solution of metallic salt containing extracted constituents resulting from oil refining processes. No. 1,966,729. John H. Loomis, Long Beach, and Joyce McKinney, Davidson City, Calif., to Vapor Treating Processes, Inc., Los Angeles, Calif.

Cracking hydrocarbon oils. No. 1,966,640. Jacque C. Morrell, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Hydrocarbon oil conversion, which comprises subjecting oil to cracking conditions of temperature and superatmospheric pressure. No. 1,966,639. Jacque C. Morrell, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process improvement for producing valuable refined products from unrefined petroleum fractions. No. 1,966,624. Robert T. Haslam, Westfield, N. Y., to Standard I. G. Co., N. Y. City.

Process for treating the residuum formed in the pressure cracking of hydrocarbon oils. No. 1,966,455. Jacque C. Morrell, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process for the degumming and stabilizing of low-boiling hydrocarbons. No. 1,966,467. Donald R. Stevens, Pittsburgh, Pa., and William A. Gruse, Wilkinsburgh, Pa., to Gulf Refining Co., Pittsburgh, Pa.

Method for the production of alcohol from olefines. No. 1,967,399. William Engs and Richard Morave, Berkeley, Calif., to Shell Development Co., San Francisco, Calif.

Method of sweetening hydrocarbon distillates. No. 1,968,089. Jacque C. Morrell, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

New hydroxylated derivatives of paraffins. No. 1,968,151. Karl Keller, Frankfort-on-the-Main-Techenheim, and Edward Gofferje, Frankfort-on-the-Main, Germany, to General Aniline Wks., N. Y. City.

Process of dewaxing mineral oils. No. 1,968,239. Chester E. Adams, Hammond, Ind., to Standard Oil Co., of Ind., Chicago, Ill.

Process for production of lubricating oils. No. 1,968,392. Robert E. Haylett, Long Beach, Calif., to Union Oil Co. of Calif., Los Angeles, Calif.

Process of neutralization. No. 1,968,397. Raymond Thayer Howes, Long Beach, Calif., to California First National Bank of Long Beach, as trustee.

Preparation of olefine derivatives. No. 1,968,601. Karl Ellund, Berkeley, and Theodore Evans, Oakland, Calif., to Shell Development Co., San Francisco, Calif.

Explosives

An explosive consisting of non-acidic constituents, etc. No. 1,966,652. Herbert G. Tanner, Wilmington, Del.

Method of producing smokeless powder from nitrocellulose, solvent and precipitation of the nitrocellulose with water. (2) Use of an oxidizing salt. No. 1,966,806. Harold M. Spurlin, Kenvil, N. J., to Hercules Powder Co., Wilmington, Del.

Process of making propellant powders. No. 1,967,913. Gordon C. Tibbitts and Frederick R. Seavey, Alton, Ill., to Western Cartridge Co., East Alton, Ill.

Process for the production of ammonium nitrate base explosive charges capable of being poured or cast. No. 1,968,158. Phokion Naoum and Robert V. Sommerfeld und Falkenhayn, Leverkusen-Schlebusch, near Cologne, Germany, to Dynamit-Aktiengesellschaft vormals Alfred Nobel & Co., Cologne, Germany.

Agricultural Chemicals

Fertilizer of urea, potassium chloride and substantially free from impurities which cause said fertilizer to be hygroscopic. No. 1,966,820. Russell M. Jones, New Brunswick, N. J., to the Barrett Co., N. Y. City.

Non-caking fertilizer containing ammonium nitrate and a sulfate of a metal. No. 1,966,947. Carl Eyer, Ludwigshafen-on-the-Rhine, Gottwald Baetz, Oggersheim, and August Herterich, Gerthe, Germany, to the I. G., Frankfort-am-Main, Germany.

Method of ammoniating solid mono-ammonium phosphate. No. 1,967,049. Ladislav Boor, Roselle, N. J., to American Cyanamid Co., N. Y. City.

Use of nitrogen trichloride to prevent fruit decay. No. 1,967,074. John C. Baker, Montclair, N. J.

Removal of residual poisons from fruits and vegetables by subjection to a weak solution of a strong acid. No. 1,967,176. Arthur M. Henry, Haddonfield, N. J., to the people of the U. S.

Process for making a fertilizer consisting of dicalcium phosphate and ammonium sulfate. No. 1,967,205. Iacob Hagens and Ludwig Rosenstein, San Francisco, and Wilhelm Hirschkind, Antioch, Calif., to the Barrett Co., N. Y. City.

Preparation of organic mercury compounds and use as seed disinfectants. No. 1,967,372. Fritz Schonhofer, Elberfield, and Wilhelm Bonrath, Leverkusen-on-the-Rhine, Germany, to Winthrop Chemical Co., N. Y. City.

Weed destroyer consisting of arsenic acid and sulfuric acid. No. 1,967,628. Carlton R. Rose, Berkeley, Calif.

Process for making a fertilizer and stimulating agent. No. 1,968,176. Walter Schoeller and Max Dohrn, Berlin-Westend, and Hans Goebel, Berlin-Reinckendorf, Germany, to Schering-Kahlbaum, A. G., Berlin, Germany.

Apparatus for the production of solid ammonium sulfate and di-ammonium phosphate. No. 1,968,682. Christian Johannes Hansen, Essen, Germany, to the Koppers Co. of Delaware, Pittsburgh, Pa.

Trade mark, "B C S—Insecticides—Fungicides. Basic Copper Sulfate." No. 349,596. Sherwin-Williams Co., Cleveland, O.

Fungicides & bactericides. No. 1,962,109. E. B. Alvord, to Grasselli Chem. Co., Cleveland, O.

Insecticide. No. 1,961,840. E. K. Bolton, to Grasselli Chem. Co., Cleveland, O.

Process for mfr. of fertilizer. No. 1,961,104. C. J. Hansen, Ger., to The Koppers Co., Pittsburgh, Pa.

Trade mark, "Vita-Lux." Fertilizers. No. 348,362. Vita Prod. Corp., Salt Lake City, Utah.

Trade mark, "Peruvian Merco," fertilizers. No. 336,160. Merchants' Fert. & Phosphate Co., Pensacola, Fla.

Naval Stores

Solvent-oxalic acid method of refining rosin. No. 1,959,564. J. N. Borglin, to Hercules Powder Co., Wilmington, Del.

Water Purification and Sewage

Process for water purification No. 1,968,724. Oliver M. Urbain, Columbus, Ohio, to Charles H. Lewis, Harpster, Ohio.

Process of treating sewage sludge. No. 1,967,197. Edmund B. Besselievre, Spring Lake, N. J., to the Dorr Co., N. Y. City.

Process for the purification of organically polluted waters. No. 1,967,916. Oliver M. Urbain, Columbus, Ohio, to Charles H. Lewis, Harpster, Ohio.

Tanning and Leather

Sodium tri-chlorphenate, sodium silico-fluoride & beta naphthol, for preserving green hides. No. 1,961,740. V. Conquest, to Armour & Co., Chicago.

Composition for treating leather. No. 1,968,004. Henry McMaster Ulmer, Elmira, N. Y., to John G. Lanning, Corning, N. Y.

Process for prenaring vegetable tanning agents or composition therefore. No. 1,968,024. Frederick W. Binns, Quincy, Mass., to Virginia Smelting Co., Portland, Maine.

Azo dye for rubber. No. 1,962,511. Krzikalla, Koch and Scheurer, Ger., to General Aniline W'ks, Inc., N. Y. City.

Auramine coloring matter. No. 1,962,368. G. W. Talbert, to Nat'l Anil. & Chem. Co., N. Y. City.

Company Booklets

C245. General Plastics, Inc., North Tonawanda, N. Y. *Durez Molder* for August reports highlights in the news of the plastic field.

C246. Grasselli Chemical Co., Cleveland, Ohio. New booklet describes "Loro", a new contact insecticide for control of aphids, thrips, red spider, leaf hoppers, and similar pests.

C247. Merck & Co., Rahway, N. J. The Quinine Formulary contains illustrative prescriptions and the various uses of quinine alphabetically arranged.

C248. Monsanto Chemical Co., St. Louis, Mo. The 15th edition of the complete list of Monsanto products arranged alphabetically for your ready reference.

C249. Philadelphia Quartz Co., 121 S. 3rd st., Philadelphia. *P's & Q's* for August returns to a comparison of metasilicate and other cleansers on metals.

C250. Rossville Commercial Alcohol Corp., Terre Haute, Ind. August *Alcohol Talks* is devoted to an enlightening discussion of alcohol sources.

C251. The Neville Co., Pittsburgh, Pa. New booklet describes in detail Neville benzol as a blending material for motor fuels. Refiners, marketers and those interested technically will find the booklet most complete and instructive.

C252. Southern Alkali Corp., Empire State Bldg., N. Y. City. To commemorate the opening of the 1st alkali plant in the South, Southern Alkali is issuing a special brochure. It is extremely doubtful that any alkali user, large or small, need be told more to induce him to send for this booklet. But, if for any reason he is not, a map showing the market zone of the new plant graphically forecasting a new realignment of alkali markets that will be nothing short of revolutionary; an intimate discussion of the plant erection; a study of the location and natural resources; and a detailed resume of the alkalies now being made at Corpus Christi, are certainly compelling reasons. Typography and layout merit special commendation.

Chemical Industries,
25 Spruce Street,
New York City.

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Company Booklets—Sept.

ADVERTISING PAGES REMOVED

Chemical Production

A digest of plant management, design, equipment and containers for the makers of chemicals

Chemicals—Soviet Appreciates Need of a Huge Industry

During the period of the 1st Five-Year Plan Soviet chemical industry rose from eighth to fourth place in the world as regards production. Output in '32 of the branches of the industry controlled by the Commissariat for Heavy Industry amounted to 1.5 billion rubles, 2½ times the '28 output and 3 times that of '13. For certain products the increase was much greater, and many branches of the industry—synthetic nitrogen, coke by-products, aniline dyes, synthetic rubber, rayon, rosin and turpentine, synthetic rosins, potassium salt, apatite and many pharmaceutical products—were newly built up, having been entirely or almost entirely unknown in pre-war Russia. Capital investments during the 4 years in 1928-1932 totaled 1.46 billion rubles, considerably exceeding the schedule. In '33 additional investments of 800 million rubles were made and output showed a gain of 8.2%. By the end of the Five-Year Plan, of the basic capital of the heavy chemical industries over 80% had been built or installed during the period.

First attention has been given to the manufacture of producers' goods — basic chemicals, coke by-products, paints and varnishes, aniline dyes, wood distillation by-products, etc.—which now constitute almost two-thirds of the total output as compared with about one-third 5 years ago. Of the basic chemicals the largest share is taken by fertilizers, important in the agricultural development of the country. In 1931 Soviet chemical industry supplied agriculture with over one million tons of fertilizers, as compared with 260,000 tons in 1928-29. In pre-war Russia the output of fertilizers did not exceed 62,000 tons a year, and this was confined solely to superphosphates. By '33 the Soviet had increased production of superphosphates to 690,000 tons—over ten times the pre-war figure and 3¾ times the output recorded in 1928. Production of ground phosphorite totaled 430,000 tons in 1933, a gain of 8.6% over the previous year. In addition there has been organized the output of potash and nitrogenous fertilizers, not produced at all in pre-war Russia, while output of other basic chemicals has likewise recorded rapid growth. The '32 output of some of the most important products of the heavy chemical industry, as compared with production in 1913 and 1928 is shown in the following table:

	1913	1928	1932	Ratio of 1932 to 1913 (in per cent)	Ratio of 1932 to 1928 (in per cent)
Superphosphates (in thous. tons)	62	182	612	987	336
Sulphuric acid (in thous. tons)	110	242	495	450	205
Calcined soda (in thous. tons)	154	230	288	187	125
Paints and varnishes (in mill. rubles)	13	60	120	450	200
Wood distillation by-products (in mill. rubles)	...	36	100	...	278

In the development of the chemical industry scientific research work has played a leading role. More than 50 technical institutes have been founded, employing over 10,000 scientifically trained men and women. Among the more important of these are the Karpov Institute, the Nitrogen Institute, the Institute of Applied Chemistry and the Chemical-Pharmaceutical Institute. A considerable number of foreign experts have been engaged. Among the American firms which have rendered technical assistance to the Soviet chemical industry are: Koppers Construction (designing and installing coke ovens); Nitrogen Engineering of New York (synthetic ammonia plants at Berezniky and Bobriky); Du Pont (fertilizer plants); and Westvaco Chlorine (production of chlorine and caustic soda).

Three-fold Increase in Next 5 Years

During the 2nd Five-Year Plan output of the chemical industry as a whole is scheduled to show a 3-fold increase —from 1.9 billion rubles in '32 to 5.7 billion in '37. An especially large gain is planned for basic chemicals as a whole (6 times) and for fertilizers in particular (10-fold). Aside from superphosphates, a number of new concentrated phosphate products will be produced and the U.S.S.R. is expected to reach a position second only to the U. S. in this field. Output of sulfuric is planned to increase from 495,000 tons in '32 to 2,080,000 tons in '37; of calcined soda from 284,000 to 750,000 tons. Similar development is outlined for the coke by-products, aniline, paint and varnish, synthetic products, drug and pharmaceutical, plastic, rubber-asbestos, wood distillation and other branches of the chemical industry.

Capital investments in the chemical industries supervised by the Commissariat for Heavy Industry are to total 4.77 billion rubles for the period. This is more than 3 times the expenditures made during the 1st Five-Year Plan. *Economic Review of the Soviet Union.*

Chemiker Zeitung reports catalytic reaction of phenol vapor with ammonia at 10 atmospheres results in 90% of aniline and other primary aromatic amines. Process originates from the Kaiser Wilhelm Institute for Coal Research.

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Heavy Chemicals

Barium Sulfate Particle Size

Particle size in barium sulfate, and particularly possible availability of products with particle sizes occupying range between those of ground heavy spar and precipitated blanc fixe, is discussed by Dr. Hans Wagner and Dr. A. Jorzig, of the Forschungs-Institut für Farbentechnik, and published as Communication No. 30 of this Institute in the *Farben Zeitung* July 28, '34. Largest proportion of blanc fixe made in Germany is prepared by precipitation with sulfates or sulfuric acid of barium sulfide liquors obtained by the reduction of heavy spar. As compared with material made from witherite, or as a by-product in peroxide manufacture, substance made from barium sulfide is coarser and has a less plastic consistency. It has been proposed to purify this product by methods that have been adopted for the purification of ground heavy spar, but apparently expense has always been an obstacle.

Natural heavy spar and precipitated blanc fixe present extremes is particle size. Heavy spar is of hard texture and good grinding behavior, and can give heterodisperse products with average particle size of 2--25μ. Such grades, when iron free, are usually termed "special" in the trade, against normal ground spars O.OO and 1 which contain particles up to 70μ. Even coarsest spar can be ground intensively on special mills until its particle fineness is even greater than that of normal blanc fixe. Difficulty is, however, that such a product is no longer a pure white, while expense is much greater than that in blanc fixe precipitation. Blanc fixe itself is usually more uniform, but even so the variations between individual grades are often very considerable. By precipitating in the cold, the fineness almost approaches that of the realm of coloidal dispersion, not always desirable. Many commercial grades of blanc fixe contain colloidal constituents, but in addition nearly always have present primary particles of from 0.5 to 2 μ, which easily agglomerate into secondary particles with dimensions up to 10 μ. Even the finest precipitated barium sulfate contains a certain quantity of primary particles over 1 μ in size.

Fine Sizes Most Desired

From the users' point of view, exceptionally fine particle size in barium sulfate is a desideratum in the production of leather-coating colors, printing inks, and paper colors, but it is not suitable for many ordinary paint purposes, particularly for the production of anti-corrosive paint for outside and metal work when a particle size less than that of ground spar, but greater than that of blanc fixe, is desired. A number of processes have been patented for the production of these intermediate type products. It is known that barium sulfate dissolves in molten alkalies and alkali salts, and this fact has been utilized in the purification of heavy spar itself. But it is also serviceable in the manufacture of products of definite particle size, or, in other words, definite degrees of dispersion.

U. S. patent 1,758,009, granted to O'Brien, heavy spar is fused with saltpeter and salt, with the addition of an oxidizing agent. By German patents 485,007 and 491,350 of Lichtenberger and Kaiser, heavy spar is dissolved in fused alkali salts; freed from insoluble matter by settling, treated with oxidizing gases in the presence of alkaline earth salts, and finally quenched and ground. German patent 567,348 of the Sachtleben company works in the other direction. It starts from precipitated blanc fixe, and calcines this for one hour at 300--1,000° C. in the presence of, at the most, 10% alkali or alkali salts. By adopting a definite range of conditions in the Lichtenberger and Kaiser process, it is possible to obtain a barium sulfate containing in addition to fine particles of approximately spherical shape from 10 to 50% in the form of needles of 10--30 μ in length. X-ray investigation has shown that these needles are structurally identical with heavy spar, and consequently belong to the rhombic crystal system, and are not, as was earlier supposed, a monoclinic modification of barium sulfate. This needle spar is one of the bidisperse types of bodies which have been shown to have exceptionally valuable properties, particularly in the preparation of anti-corrosive paints. It combines the advantages of a high degree of dispersion and small oil consumption with a degree of swelling lower than that of spar. In brightness and whiteness it approximates blanc fixe itself closely. When such needle spar is mixed with a finely dispersed pigment, an exceptionally efficient space packing is realized.

Material obtained by the Sachtleben process for the treatment of blanc fixe, although in particle size very close to that of ground spar, differs from the latter in its distinct spherical shape. Microscopic examination reveals the typical appearance of potato starch. This "ball spar" also nas properties indicating definite and distinct fields of utilization. From digest in *Chemical Trade Journal* (British), Aug. 3rd, page 75.

Patents—Industrial Chemicals, Equipment

Method and apparatus for production of metal oxides of high purity. No. 1,967,235. Karl A. Ferkel, Los Angeles, Calif.

Water measuring and supplying device for mixers. No. 1,967,097. Harold E. McCrery, Pittsburgh, Pa., to Blaw-Knox Co., Blaw Knox, Pa.

Pressure filter. No. 1,967,070. Albert O. Walker, Independence, Mo., to Tru-Way Mfg. Co., Kansas City, Mo.

Self-cleaning continuous filter. No. 1,966,626. Ferdinand G. Henry, Moline, Ill.

Process of producing ammonia by passing a gaseous mixture of nitrogen and hydrogen over a catalyst mass at high temperatures under pressures below 400 atmospheres. No. 1,704,214—application for reissue Serial No. 638,834. Ralph S. Richardson, Scarsdale, N. Y., to Chemical Engineering Corp., N. Y. City.

Apparatus (a closed mercury boiling and condensing system, including a mercury boiler) for heating and cooling at high temperatures. No. 1,966,441. Original, Apr. 20, 1922; renewed Oct. 10, 1933. Crosby Field, Brooklyn, N. Y., to Chemical Machinery Corp., N. Y. City.

Process of purifying gas material. No. 1,967,736. Lawrence J. Bowditch, Flushing, N. Y., to the Linde Air Products Co., N. Y. City.

Process for the purifying of liquefied gases. No. 1,967,717. Also No. 1,967,718. Walter F. Moeller, Buffalo, N. Y., to the Linde Air Products Co., N. Y. City.

Process of separating a contained liquid and a solid without loss of the solid by vaporization; process for drying hexachlorethane by heating in a closed space until it is liquefied, and withdrawing the water. No. 1,966,456. Rolland D. Meyers, Edgewood Arsenal, Md.

Process for producing distended fibrous product by first hydrating fibrous material to partially gelatinize the surfaces of the fibers and then treating with chemical to produce foam followed by drying. No. 1,966,437. Frank L. Bryant, Chicago, Ill., to Cellufoam Corp., Chicago, Ill.

Method of causing given volume of boiling mercury to have the effective depth pressure and volume of a much larger amount by use of ferrous metal wool. No. 1,966,442. Crosby Field, Brooklyn, N. Y.

Method of production of amines. No. 1,966,478. Karl Baur, Ludwigshafen-on-the-Rhine, Germany, to the I. G., Germany.

Method of making free flowing powdered milk through use of tricalcium phosphate. No. 1,966,513. Henry V. Moss and Thomas H. Wheelock, St. Louis, Mo., to Swann Research, Inc., Birmingham, Ala.

A composition comprising zein and an aromatic alkylated sulfonamide incorporated together. No. 1,966,604. James F. Walsh, Newton Center, and John V. MacDonough, Watertown, Mass., to American Maize Products Co., N. Y. City.

Method of making bleaching powder. No. 1,966,631. Edward Thorndike Ladd, Lewiston, N. Y., to Isco Chemical Co., Niagara Falls, N. Y.

Process for the manufacture of monoalkyl ethers of aromatic polyhydroxy compounds. Karl Marx, Dessau in Annhalt, and Erich Lehmann, Wolfen, near Bitterfield, Germany, to General Aniline Wks., N. Y. City.

Process for working up cryolite bearing rocks. Hubert Schranz and Joseph Klose, Magdeburg, Germany, to Fried, Krupp, Grusonwerk Aktiengesellschaft, Magdeburg, Germany.

An anti-corrosive liquid containing salts of oleic acid hydrogen sulfate substantially free from any extraneous fatty bodies. No. 1,966,711. Melvin De Groote and Wilbur C. Adams, St. Louis, and Kenneth R. Farr, Webster Groves, Mo., to Tretolite Co., Webster Groves, Mo.

Method of removing soluble silica compounds from water. No. 1,966,733. Hans A. Reimers, Midland, Mich., to Dow Chemical Co., Midland, Mich.

Method of producing acetylene by compression of natural gas. No. 1,966,779. Robert G. Wulff, Los Angeles County, Calif., Wulff Process Co., Los Angeles, Calif.

Process for the preparation of ketones. No. 1,966,797. Philip H. Groggins and Ray N. Nagel, Washington, D. C., to the people of the U. S.

Method of separating calcium chloride from magnesium chloride. No. 1,966,832. Carl F. Prutton, Cleveland, Ohio, to Dow Chemical Co., Cleveland, Ohio.

Refining of maleic acid by distillation in the absence of organic solvent at a temperature in excess of 135 degrees C. and under pressure. No. 1,966,852. Michael N. Dvornikoff, St. Louis, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Manufacture of maleic anhydride from crude maleic acid. No. 1,966,853. Michael N. Dvornikoff, St. Louis, Mo., to Monsanto Chemical Co., St. Louis, Mo.

An industrial liquid comprising halogenated hydrocarbon. No. 1,966,881. Geza Braun, N. Y. City, to Paul J. Sartain, Philadelphia, Pa., Richard C. Fassnacht, N. Y. City, and Richard C. Schwoerer, Philadelphia, Pa.

Method of producing water gas from culm-a fuel. No. 1,966,886. Fred H. DeChant, Reading, Pa., to Industries of America.

Process of calcining gypsum. No. 1,967,029. Lewis C. Varrick and William L. Ellerbeck, Salt Lake City, Utah.

Method of producing hydrocyanic acid from a crude cyanide. No. 1,967,051. Guy H. Buchanan, Westfield, N. J., and Glenn B. Winner, Elizabeth, N. J., to American Cyanamid Co., N. Y. City.

Production of acetic acid from carbon monoxide and methanol in presence of a catalyst. No. 1,967,189. Ralph Lyman Brown, Syracuse, N. Y., to Atmospheric Nitrogen Corp., N. Y. City.

Process of granulation of finely divided materials. No. 1,967,222. Herrick Ransom Arnold, Elmhurst, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process for the manufacture of methyl vinyl ketone. No. 1,967,225. Rollin F. Conway, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

A phenolic aldehyde rosin phthalic glyceride condensation product. No. 1,967,232. Carleton Ellis, Montclair, N. J., to Ellis-Foster Co., Montclair, N. J.

Condensation product of urea and formaldehyde and method of making same. No. 1,967,261. Kurt Ripper, Vienna, Austria, to Synthetic Plastics Co., Inc., N. Y. City.

Method of recovering sulfur. No. 1,967,263. Also No. 1,967,264. Ludwig Rosenstein, San Francisco, Calif., to United Verde Copper Co., Inc., N. Y. City.

Process of reducing sulfur dioxide. Ludwig Rosenstein, San Francisco, Calif., and Leonard Klein, Clarkdale, Ariz., to United Verde Copper Co., Inc., N. Y. City.

Process of producing an article of manufacture which comprises impregnating a porous material with chloro-2-butadiene-1,3 and allowing the chloro-2-butadiene-1,3 to polymerize under conditions adapted to prevent substantial evaporation. No. 1,967,275. Ira Williams, Wilmington, Del., to E. I. du Pont to Nemours & Co., Wilmington, Del.

Fumigant comprising mixture containing a moisture decomposable soluble cyanide and hygroscopic salt. No. 1,967,290. Kenneth F. Cooper, Great Neck, N. Y., to American Cyanamid Co., Inc., N. Y. City.

New method of fumigation. No. 1,967,304. George P. Gray, Monrovia, Calif., to American Cyanamid Co., N. Y. City.

Method of hydrolyzing fat for the production of fatty acid and glycerol. No. 1,967,319. Jay R. Moore, Oakmont, and Earl K. Wallace, Pittsburgh, Pa., to Jay R. Moore.

Process for the continuous manufacture of esters in the liquid phase. No. 1,967,551. Frederick Alexander Ferrier Crawford, Saltcoats, Scotland, to Imperial Chemical Industries, London, England.

Method of making potassium bicarbonate and magnesium carbonate trihydrate from Engel salt. No. 1,967,630. Friedrich Rusberg, Berlin-Niederschoneweide, Germany, to Kali-Chemie Aktiengesellschaft, Berlin, Germany.

Conversion of hydrocarbons. No. 1,967,665. Paul Feiler and Hans Haeuber, Ludwigshafen-on-the-Rhine, Germany, to the I. G., Frankfort-on-the-Main, Germany.

Process of preparing anhydrides of halogen fatty acids. No. 1,967,668. Paul Heisel, Gersthofen, near Augsburg, Germany, to the I. G., Frankfort-on-the-Main, Germany.

Condensation process yielding artificial masses of the urea formaldehyde type. No. 1,967,685. William Pungs and Karl Eisenmann, Ludwigshafen-on-the-Rhine, Germany, to Unyte Corp., N. Y. City.

Adhesive and film-forming composition (silicate of soda). No. 1,967,829. Paul C. Lemmermann, East Cleveland, Ohio, and Raymond F. Remier, Rocky River, Ohio, to Grasselli Chemical Co., Cleveland, Ohio.

Polymerized halogenated hydrocarbon and process of producing. No. 1,967,860. Wallace H. Carothers, Arnold M. Collins and James Kirby, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Cyclic compound and process for preparing same. No. 1,967,862. Wallace H. Carothers, Fairville, Pa., and Arnold M. Collins, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Halogen-vinyl acetylene and process for preparing same. No. 1,967,864. Ralph Albert Jacobson, Ardentown, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

An aqueous emulsion comprising chloro-2-butadiene-1,3 and an oxidizing agent. No. 1,967,865. Arnold M. Collins, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process for purifying sulfur. No. 1,967,874. John Stanley Dunn, Norton-on-Tees, England, to Imperial Chemical Industries, London, England.

Separation of mixtures of alkali metal nitrates with ammonium chloride. No. 1,967,897. Friederich Nessler, Berlin, Germany, to the I. G., Frankfort-on-the-Main, Germany.

Method and apparatus for treating gases and the formation of helium hydride. No. 1,967,952. Carl J. Warnke, Elkhart, Ind., to the Adams & Westlake Co., Chicago, Ill.

Process of producing lime-gypsum plaster. No. 1,967,959. Samuel Gerard McAnally, Catasauqua, Pa.

Process of impregnating wood with oil. No. 1,967,990. Carleton B. Edwards, Indianapolis, Ind., to Peter C. Reilly, Indianapolis, Ind.

Process for concentrating phosphate ore. No. 1,968,008. George Albert Chapman, Forest Hills, N. Y., and John W. Littleford, Alameda, Calif., to Minerals Separation North American Corp., N. Y. City.

Apparatus for and method of separating suspended solids from liquids by sedimentation or settling. No. 1,968,031. William J. Donohue, Chicago, Ill.

Process for the preparation of hydrogen. No. 1,968,063. John C. Woodhouse, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process for the production of diphenyl. No. 1,968,154. Joe E. Moose and William N. Pritchard, Anniston, Ala., to Swann Research, Inc., Birmingham, Ala.

A freezing hold-over solution comprising a salt solution suspended in an agar-agar gel. No. 1,968,195. Joseph Fleischer, Dayton, Ohio, to Frigidaire Corp., Dayton, Ohio.

Hydrogenation of organic substances. No. 1,968,208. Georges Hugel, Strasburg; Marcel Paul, Nancy and Maurice Boistel, Brebach, France, to Societe d'Etudes Chimiques Appliquees "S.E.C.A.", Nancy, France.

Process for refining vegetable and animal oils and fats. No. 1,968,252. Wilhelm Gensecke, Gonzenheim, near Frankfort-on-the-Main, Germany, to American Lurgi Corp., N. Y. City.

Apparatus for producing solid carbon dioxide. No. 1,968,318. Arthur Seligmann, Dusseldorf, Germany.

Method of producing fibrous material through use of ferric chloride and arsenious acid and a fibrous product. No. 1,968,418. Treadway B. Munroe and Marion D. Coulter, Chicago, Ill.

Process or method of producing a stabilized nitro cellulose. No. 1,968,466. John L. Parsons, Erie, Pa., to Hammermill Paper Co., Erie, Pa.

Acoustal plaster of rock wool containing diatomaceous earth, lime and cereal flour. No. 1,968,489. Seymour M. Jenkins, Lakewood, Ohio.

Method of making pulverulent chromium. No. 1,968,490. Leo D. Jenson.

Process and apparatus for storing liquid carbon dioxide. No. 1,968,504. Hans Rufener and Theophil Eichmann, Bern-Liebefeld, Switzerland, to International Carbonic Engineering Corp., Kennett Square, Pa.

Process for purifying and separating mixtures of high boiling, thermally unstable organic liquids. No. 1,968,512. Charles O. Young, deceased, late of Charleston, W. Va., to Marion K. Young, executrix, to Carbide & Carbon Chemicals Corp., N. Y. City.

Method and apparatus for liquefying and separating gaseous mixtures. No. 1,968,518. William W. Fraser, N. Y. City, to The Linde Air Products Co., N. Y. City.

Phosphoric acid purification by solvent extraction. No. 1,968,544. Charles A. Vana, Cleveland, Ohio, to the Grasselli Chemical Co., Cleveland, Ohio.

Process for oxidation of alcohols. No. 1,968,552. Harlan A. Bond, Metuchen, N. J., Lee B. Smith, Woodbridge, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process for the manufacture of chromium sesqui oxide. No. 1,968,599. Jules Emile Demant, Cuise Lamotte, France, to Bozel-Maletra Societe Industrielle de Produits Chimiques, Paris, France.

Process for purification of gases (removal of carbon dioxide). No. 1,968,655. Donald A. Rogers, Petersburg, Va., to Atmospheric Nitrogen Corp., N. Y. City.

Method of inhibiting the corrosive action of alkaline aqueous solutions, etc. No. 1,968,722. Irwin Stone, N. Y. City.

Process for the separation of magnesium chloride from calcium chloride. No. 1,968,737. Taylor Borradaile, Charleston, W. Va., to Alkaline Earths Co., Charleston, W. Va., a copartnership.

Fine Chemicals

Crystalline Polymers of Formaldehyde

According to a French patent crystalline polymers of Formaldehyde (polyoxymethylenes) in high yield can be obtained by a process based upon treatment of exceptionally highly concentrated aqueous formaldehyde solution with a very small amount of an organic or inorganic base. Complete freedom of the raw material from methyl alcohol is an essential condition for a good yield of crystalline polymer which may amount to as much as 90%. As example a 55% formaldehyde solution obtained by distillation of the commercial 40% solution in a special apparatus, and containing less than 10% of methyl alcohol, is treated with a small amount of saturated ammonia solution when spontaneous rise in temperature takes place. Reaction mixture is cooled and concentrated to leave a residue which is dried at 25 to 30° C. for at last 12 hours. Yield of crystalline polymers represents 75 to 80% of the original formaldehyde, remainder being mostly recovered in the distillate. *Chemical Age* (British) Aug. 18th, page 155.

Patents—Fine Chemicals

Process for the production of aralkyl alcohols. No. 1,988,488. Eugen Doerrer and Heinrich Hopff, Ludwigshafen-on-the-Rhine, Germany, to the I. G., Frankfort-on-Main, Germany.

Production of organic fluorine compounds. No. 1,967,244. Lee Cone Holt, Edgemoor, and Edwin Lorenzo Mattison, Wilmington, Del., to Kinetic Chemicals, Inc., Wilmington, Del.

Process of preparing anhydrous chloretone comprising subjecting molten hydrated chloretone to the action of calcium oxide. No. 1,967,287. Marion Scott Carpentier, Nutley, N. J., to Givaudan-Delawanna, Inc., N. Y. City.

Quinoline Derivatives and a process for preparing them. No. 1,967,356. Otto Eisleb, Hofheim-in-Taunus, Germany, to the Winthrop Chemical Co., Inc., N. Y. City.

Allyl substituted acetamides, and method of producing the same. No. 1,967,388. Karl Ziegler, Heidelberg, Germany, to Schering-Kahlbaum, A. G., Germany.

Method of producing guanidino fatty acids. No. 1,967,400. Siegfried Fischel, Berlin-Baumschulenweg, Germany, to Schering-Kahlbaum, A. G., Berlin, Germany.

Method of producing terpenes. No. 1,967,430. Johannes Rebner, Finow, near Eberswalde, Germany, to Schering-Kahlbaum A. G., Berlin, Germany.

Method of producing aliphatic and hydro-aromatic oxides. No. 1,967,433. Walter Schoeller and Erwin Schwenk, Berlin-West end, and Erich Borgwardt, Berlin-Panbow, and Franz Aichner, Berlin, Germany, to Schering-Kahlbaum, A. G., Berlin, Germany.

Tasteless basic aluminum/ acetylsalicylate. No. 1,967,649. Emil Wolf, Budapest, Hungary to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara, Ujpest, Hungary.

Process for the production of alkoxyalkyl testers of organic carboxylic and sulfonic acids. No. 1,967,655. Heinrich Bertsch, Chemnitz, Germany, to H. Th. Bohme Aktiengesellschaft, Chemnitz, Germany.

As a pharmaceutical, a halide-mercurinitro-cresol. No. 1,967,686. George W. Raiziss, Philadelphia, Pa., to Abbott Laboratories, North Chicago, Ill.

Manufacture of calcium mixed salts of polyhydroxymonocarboxylic and bionic acids. No. 1,967,760. Arthur Stoll and Ernst Burckhardt, Basel, Switzerland, to the Chemical Works, formerly Sandoz, Basel, Switzerland.

An unsymmetrical mono-chloro-hydroxyl-substituted diphenylmethane having the chlorine and hydroxyl groups substituted in different rings. No. 1,967,825. Emil Klarmann, Jersey City, and Louis William Gatyas, Bloomfield, N. J., to Lehn & Fink, Bloomfield, N. J.

Process of polymerizing chlorobutadiene and resulting product. No. 1,967,861. Arnold M. Collins, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation of monoethers of glycols. No. 1,968,032. Karl R. Edlund, Berkeley, Calif., to the Shell Development Co., San Francisco, Calif.

Process and product relating to tertiary ethers. No. 1,968,033. Theodore Evans, Oakland, and Karl R. Edlund, Berkeley, Calif., to Shell Development Co., San Francisco, Calif.

Method of manufacturing acetyl ester compounds. No. 1,968,179. Kumazo Suganuma and Kan-Chiro Goto, Tobe Machi, Naka-Ku, Yokohama, Japan.

Method of manufacturing aromatic carboxylic acids. No. 1,968,300. Lucas P. Kyrides, St. Louis, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Coal Tar Chemicals

Benzol Purification

Ferric sulfate for the purification of benzol or petrol is suggested in English Patent 409,816, '32. The light spirit is refined, after removal of any bases, by slow boiling at 40-80°C. through a bed of coke or other inert material, with ferric sulfate mixed with Fuller's earth. After this it is neutralized by filtration over a solid neutralizer in a coke filter bed. Bed may be made by evaporating a solution of ferric sulfate containing the coke. *Chemical Trade Journal*, August 3, p. 79.

Patents—Coal Tar Chemicals

Method and apparatus for controlling the composition and supply of solid carbonaceous material and liquid binding material to a briquetting press. No. 1,967,073. Ellsworth B. A. Zwoyer, Perth Amboy, N. J., to General Fuel Briquette Corp., N. Y. City.

Manufacture of an absorbent briquette consisting of finely divided carbonized absorbing material and a thermosetting resinous condensation product as a bond. No. 1,966,553. Clayton L. Kropp, Cleveland, Ohio, to Ohio Carbon Co., Cleveland, Ohio.

Process of producing alpha-arylamino-anthraquinones. No. 1,966,646. Donald G. Rogers, Hamburg, and James Ogilvie, Buffalo, N. Y., to National Aniline & Chemical Co., N. Y. City.

Process of preparing diazo-types. No. 1,966,755. Guy Grandsaignes D'Hauterive, St. Dennis, France, to Kalle Co., Aktiengesellschaft, Weisbaden-Biebrich, Germany.

Method of producing azo coloring material. No. 1,967,345. Fritz Ballauf and Albert Schmeizer, Cologne-Mulheim, Germany, to General Aniline Works, Inc., N. Y. City.

Process of preparing lakes from basic dyestuffs. No. 1,967,360. Erich Hartmann, Leverkusen-Wiesdorff, and Friedrich Muth, Leverkusen-I. G. Werk, Germany, to General Aniline Wks., N. Y. City.

Production of nitrogenous vat dyestuffs. No. 1,967,363. Max Albert Kunz, Manheim, and Karl Koeberle, Ludwigshafen-on-the-Rhine, to General Aniline Wks., N. Y. City.

Preparation of halogenanthraquinone-benzacridones. No. 1,967,364. Max Albert Kunz, Mannheim, and Karl Koeberle and Erich Berthold, Ludwigshafen-on-the-Rhine, to General Aniline Wks., N. Y. City.

Preparation of water insoluble azo dyestuff derived from 2.3-hydroxynaphthoic acid arlides. No. 1,967,370. Eugen Rimlle and Eugen Glietenberg, Leverkusen-on-the-Rhine, Germany, to General Aniline Wks., N. Y. City.

Preparation of an azo dyestuff. No. 1,967,373. Gerhard Schrader, Opladen, and Albert Schmelzer and Fritz Ballauf, Cologne-Mulheim, Germany, to General Aniline Wks., N. Y. City.

Manufacture of dibenzanthrone derivatives. No. 1,967,617. Edward T. Howell, Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Apparatus for low-temperature carbonization. No. 1,967,691. Adolf Traut, Ludwigshafen-on-the-Rhine, Germany, to the I. G., Frankfort-on-the-Main, Germany.

Alkylamino-4-arylaminoanthraquinones and process of making such products. No. 1,967,772. Paul Grossmann, Basel, Switzerland, to Society of Chemical Industry, Basel, Switzerland.

Manufacture of a color lake. No. 1,967,912. Herbert Holroyd Stocks and Frank William Linch, Blackley, Manchester, England, to Imperial Chemical Industries, London, England.

Method of producing coke and distillate by low-temperature distillation. No. 1,968,038. Francis M. Hess, Chicago, Ill.

Process for making coke and combustible gas substantially free from suspended carbon. No. 1,968,053. William W. Odell, Chicago, Ill.

Acid wool dyestuff and the anthraquinone series. No. 1,968,178. Berthold Stein, Mannheim-on-the-Rhine, and Ernst Honold, Frankfort-on-the-Main-Fechenheim, Germany, to General Aniline Wks., N. Y. City.

Manufacture of phthalimide. No. 1,968,253. Alphons O. Jaeger, Mount Lebanon, and Lloyd C. Daniels, Crafton, Pa., to the Selden Research & Engineering Corp., Pittsburgh, Pa.

Process of treating fuel gas containing CO_2 and tar acid. No. 1,968,275. Philip J. Wilson, Jr., Edgewater, Pa., to the Koppers Co. of Delaware, Pittsburgh, Pa.

Process of treating coke with solutions of calcium nitrate and copper sulfate. No. 1,968,311. Alfred R. Powell, Mount Lebanon Township, Allegheny County, Pa., to Koppers Co. of Delaware, Pittsburgh, Pa.

Fuel gas distributing system for coke ovens. No. 1,968,367. Joseph Becker, Pittsburgh, Pa., to the Koppers Co. of Delaware, Pittsburgh, Pa.

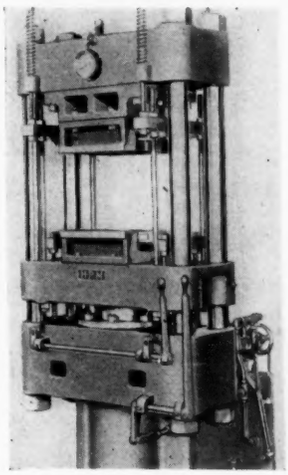
Preparing tar for use on roads. No. 1,968,746. Carl Oscar Condrup, London, England, to Thermal Industrial & Chemical Research Co., Ltd., Allington House, London, England.

New Equipment

A monthly digest of new equipment of interest to the chemical and process industries.

Novel Molding Press

A new molding press has an individual electric motor drive. Each press is compactly self-contained with press cylinder and control valve equipment enclosed within a pedestal, which also contains the supply of operating oil.



However, the outstanding feature of most vital importance to the molder, is the unusually complete system of controls. These not only provide adjustable automatic pressure control, but also regulation of speed of ram movements and an entirely new patented control principle, especially developed for plastic molding, whereby the rate of pressure increase is automatically governed according to pre-determined adjustment. Control principle introduces a new concept in the application of pressures to the molding art, superseding the "stair-step" method of changing pressures. Press is, of course, arranged for rapid closing of the molds. Speed of both closing and opening ram movements are controlled independently of the rate of pressure application. **QC 160**

Induction Heating in Drying Ovens

Now the principle of induction heating is available in paint, enamel and lacquer drying ovens. Same outstanding advantages of control, economy, superior product, better working conditions which have characterized melting furnaces are found in these drying ovens. Drying of the paint in this new process is "From the inside-out." The metal parts are heated by induction as they pass through the oven, therefore the evaporation of the volatile matter in the paint is from the layers next to the metal out. There is no possibility of case hardening and the subsequent wrinkling so often found with other types of furnaces. Result is a superior finish and elimination of rejects. Drying time is speeded up considerably, especially when the pieces to be baked are heavy because the metal parts are raised by induction to the correct temperature in a very short time and it is then only necessary to hold this temperature to permit all the volatiles to be driven off. **QC 161**

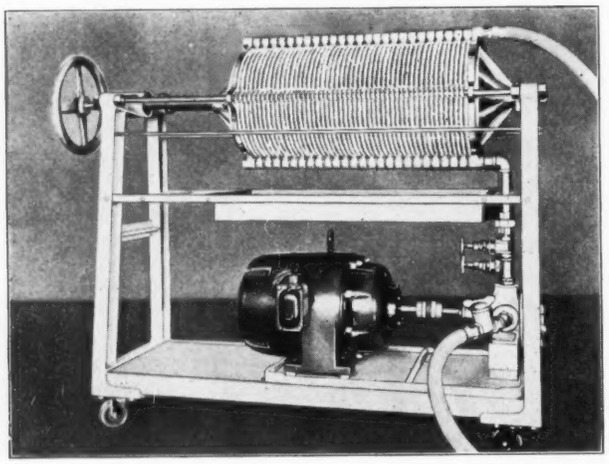
Dustless Motors

A new line of direct-current motors, designed for those applications where dust, dirt, moisture, or other foreign matter is present in large quantities, has been introduced. New motors are totally enclosed and fan-cooled, and are

available in a wide variety of electrical and mechanical modifications—in sizes from ½ to 200 hp. **QC 162**

Outstanding New Disc Filter

A new series of ultra-fine disc filters has been announced, neat and compact in design and construction; provided with a wheel, one turn of which enables the operator to open the machine for cleaning or the replacement of discs.



From 4 to 100 discs are accommodated by these new models, depending upon the quantity and type of liquid to be filtered and the speed desired. Number of discs in the machine may be increased or decreased very quickly, making filter readily adaptable for fulfilling requirements of all kinds. Filter is built on ball bearing rubber tired wheels making it easily portable from place to place in the plant. The machine may be had in aluminum or in silver plated bronze. All wearing parts are of stainless steel. Sturdy end supports are cast in one piece; there are no crevices for dirt to collect. A fully enclosed explosion-proof motor with a built-in gear reduction, is provided. Pump unit has a double valve control which enables the pump to be used for plain pumping or for the filtering work. In addition, this feature protects the strainer on the intake side of the pump. An automatic pressure control on the pump eliminates any necessity for constantly watching the filter while it is operating. Excess pressure is released automatically insuring against any damage to the motor or other parts. **QC 163**

New Hand Filling Machine

New hand filling machine, all exposed parts brightly polished and of non-corrosible materials, will fill between 600 to 1200 containers per hour. Can be disassembled in a moment without tools. It operates on the plunger principle (patented). The amount measured and discharged is controlled by the length of the plunger valve. Inlet and outlet ports are large enough to prevent separating or compression of the product. **QC 164**

New Chemical Water Treatment Feeder

Some of the new features of a new dry chemical feeder (for water treatment) are: the oscillating feed sprout which travels backward and forward to preclude clogging; self agitating, non-arching (flexing) hopper; sealed, leak-proof feed plate; improved feed adjustment, accurate and dependable; low water consumption, efficient swirl solution pot of earthenware; completely dust-proof housing; corrosion-proofed with cadmium plating and special rubber base paint; gear head (¼ H. P.) motor drive, provides speed reduction in one unit; high feed ratio (100 to 1), without need of gear change or varying drive speeds; "free-wheeling" feed device. Most ingenious features of this novel feeder are the hopper flexing scheme and the "free-wheeling feed roll" element which extrudes the chemical from the feed plate with insured uniformity. It is this feature which makes the new feeder dependable for feeding activated carbon damp lime and similar materials which hitherto has been somewhat difficult to feed with standard dry feeders. Feed roll assembly is adjustable to three positions to provide a feed variation from 1 to 100. **QC 165**

A Small Laboratory Mixer

A new laboratory mixer is on the market with a capacity of 1½ lbs. of crude rubber and correspondingly greater capacity for stocks of higher specific gravity. It is useful for experimental mixing of small batches of rubber, asphaltic materials, phenolic condensation products, resinous compounds, paints, enamels, lacquers and other plastic materials. Will produce mixes on an experimental scale comparable to those obtained in large production sizes, enabling the chemist to determine accurately and economically the physical characteristics of new formulas before putting them into production. **QC 166**

Feed for Chlorinating Solutions

A fully automatic, rugged, dependable unit for feeding chlorinating solutions made from hypochlorites or solutions of ammonia or sulfate of ammonia is now available for water treatment. **QC 167**

Paint Hose Resistant to Solvents

A new type of paint fluid hose which, it is reported, successfully resists all commercial solvents and which, in actual service, has lasted 4 to 20 times longer than rubber compounded hose, has just been announced. **QC 168**

Variable Motor Speeds

Variable speed motors are now equipped with gears for increasing or diminishing the speeds, thus enabling the operator to obtain an infinite number of speed selections. **QC 169**

Non-Corrosive Centrifugal Basket

An all-welded, stainless steel, centrifugal basket which is welded and heat treated in one piece without the addition of balance pieces is available. Machine was made expressly for a company handling a corrosive chemical. Basket was designed for use at high speeds. In addition to evading neatly the problems of rivets, loops, and battens, all-welded construction permits the forming of square corners inside the basket, and tight fitting screen installation. These features, it is claimed, allow cleaner and more rapid discharge of basket. **QC 170**

Inexpensive Fire Protection

Maximum protection at minimum cost characterizes a new automatic chemical sprinkler system (individual units) for use in factories, warehouses, and other places now without sprinkler protection. In water sprinkled plants, the system may be installed in remote spaces or for special hazards such as paint and lacquer rooms, or in storerooms and vaults requiring special protection not only from fire but water and chemical damage as well. The system is particularly attractive for buildings beyond public water mains. **QC 171**

Chemical Industries,
25 Spruce Street,
New York City.

I would like to receive more detailed information on the following: (Kindly check those desired.)

QC 160	QC 164	QC 168
" 161	" 165	" 169
" 162	" 166	" 170
" 163	" 167	" 171

Name .....

Title .....

Address .....

Equip. Sept.

Trichlorethylene in Solvent

Trichlorethylene containing about one per cent. of a soap composition consisting of a fatty acid soap and a polyglycol constitutes a process for an odorless dry-cleaning solvent composition listed under Canadian Patent 342,427.

The Literature

Articles of interest to the chemical and process industries particularly noted in a monthly review of the U. S. and foreign periodicals.

Air Conditioning. "Air Conditioning In Industry—A Review of Possible Developments," by M. C. Marsh. Chemistry & Industry (British), August 3rd, page 671.

Casein. "Improved Casein Manufacture," by Richard W. Smith, Jr. Industrial & Engineering Chemistry, August, page 819.

Detergents. "Detergents in Modern Laundry Practice," by C. A. Tyler. This is Part 2 of a series. Soap, August page 21.

Detergents. "Germicidal Detergents," by A. R. Cade & H. O. Halvorson. Soap, August, page 17.

Detergents. "The New Detergents," by R. A. Duncan, P. & G., Ivorydale, Ohio. Rayon & Melliand Textile Monthly, August, page 45.

Dyes. "Dyestuffs and Dyeing In Japan," by H. A. Koch-Osborne. A review of the past, present and future of the Japanese dye industry. The Dyer & Textile Printer (British), August 3rd, page 119.

Dyes. "Research In Azo Dyestuffs and the Work of the Azo Dye Research Chemist," by A. R. Murphy, du Pont. American Dyestuff Reporter, July 30th, page 430.

Economics. "The Price of Gold," by F. A. Pearson, Cornell University. Commercial Fertilizer, August, page 7.

Glass. "Chemical Durability of Containers," by A. K. Lyle, Hazel Atlas Glass. The Glass Industry, August, page 147.

Insecticides. "Changes and Additions to the Peet-Grady Method," by Frank C. Nelson, Stanco. A detailed discussion of improvements on this standard method of determining efficiencies of different fly sprays. Soap, August, page 81.

Leather. "Some Aspects of Synthetic Finishes for Leather," by C. A. Redfarn. The Leather Trades Review (British), August 8th, page 967.

Metallic Soaps. "Preparation of Anhydrous Metallic Soaps, Titanium Soaps," by L. W. Ryan and W. W. Plechner. Industrial & Engineering Chemistry, August, page 909.

Petroleum Chemicals. "Prospects of a Petroleum Chemical Industry," by Carleton Ellis. Industrial & Engineering Chemistry, August, page 826.

Plant Equipment. "A Study of the Action of Various Chemicals Upon Different Woods Used for Chemical Tanks," by E. Perry. Paint & Varnish Production Manager, July, page 5.

Plant Equipment. "Vulcalock Process Improves Technique In Acid Handling." Deals largely with pickling tanks, by J. R. Hoover, assistant manager, B. F. Goodrich Co. The Rubber Age, August, page 229.

Plant Management. "The Chemist and the Steam Power Plant," by W. E. Patterson, Chemistry & Industry (British), August 10th, page 696.

Plant Operation. "Some Problems of Boiler Water Treatment With Particular Reference to Colloidal Conditioning," by George S. Irving. Chemistry & Industry (British), July 20th, page 633.

Plastics. "Plastics—The Fourth Material of Construction—Its Possibilities In Architecture and Building," by Owen Griffiths. Australian Plastics and Allied Trades Review, June, page 6.

Raw Materials. "Bleaching-Earth Prospects in Tennessee"—An investigation of clays and clay resources, by Geo. I. Whitlach, assistant geologist, Tennessee Division of Geologist, Ceramic Age, August, page 37.

Rubber. "Comments From Readers On Unsolved Problems of the Rubber Industry," by J. B. Crockett (Heveatex Corp.). A reply to an earlier article in the same magazine listing 15 problems yet unsolved. The Rubber Age, August, page 235.

Safety. "Dust"—Effects of inhaling the dusts of minerals, by Dr. Leroy U. Gardner, director, Saranac Laboratory for the Study of Tuberculosis. Canadian Mining Journal, August, page 370.

Shellac. "Electrodeposition of Shellac," by N. Narasimhamurty and M. Sreenivasaya, Indian Institute of Science, Bangalore, India. Industrial & Engineering Chemistry, August, page 882.

Textiles. "The Action of Caustic Soda On Cellulose," by S. M. Neale. This is part 3 of a series. Silk & Rayon, August, page 350.

Textiles. "The Printing of Rayon Fabrics—Some Successful Recipes." Silk & Rayon, August, page 364.

Water Treatment. "Removal of Fluorides From Drinking Water," by Ralph H. McKee and William S. Johnston. Industrial & Engineering Chemistry, August, page 849.

Water Treatment. "Recent Developments in Municipal Water Softening," by A. S. Behrman, chemical director, International Filter Co., Chicago.

Research

In the determination of small quantities of iron in glasses, sands, etc., involving fusion with sodium carbonate (soda ash), it is essential that this flux be as free as possible from iron. The anhydrous reagent procurable often contains small quantities of materials rich in iron, and it is necessary to make an aqueous solution, filtering off this insoluble matter. In the subsequent crystallization and dehydration, difficulties are met. In the new and better procedure an aqueous solution of the commercial anhydrous carbonate is made, filtered,and then treated warm with alcohol. After alcohol treatments the monohydrate is produced, and this can be readily converted to the anhydrous state at a temperature not above 250°. Any soluble iron present is removed by treating the filtered solution with potassium-permanganate solution, and a little ammonia and alcohol. After filtering again, the solution is treated with alcohol to produce the monohydrate, which is then readily dried further. The method is applied to produce very rapidly the anhydrous from the crystalline form of the salt. Paper by W. H. Withey before Sheffield Society of Glass Technology and reprinted in the *Chemical Trade Journal* (British) May 25, page 396.

Govt. Publications

A digest of federal government publications and other booklets from various sources of interest to the chemical and process industries.

Mineral Resources of the United States, 1931. Metals (Part I). 710 p. $1.50.*

Copper Industry in 1933—advance summary, 6 p. Section of Publications, U. S. Bureau of Mines, Washington, D. C.

Lead and zinc pigments and zinc salts industry for 1933—advance summary, 2 p. Section of Publications, U. S. Bureau of Mines, Washington, D. C.

Barite and Barium Products in 1933—advance summary, 2 p. Sections of Publications, U. S. Bureau of Mines, Washington, D. C.

Arsenic Industry in 1933—advance summary, 2 p. Section of Publications, U. S. Bureau of Mines, Washington, D. C.

Phosphate Rock Industry in 1933—advance summary, 6 p. Section of Publications, U. S. Bureau of Mines, Washington, D. C.

Mica Industry in 1933—advance summary, 7 p. Section of Publications, U. S. Bureau of Mines, Washington, D. C.

Salt, Bromine, Calcium Chloride and Iodine in 1933—advance summary, 4 p. Section of Publications, U. S. Bureau of Mines, Washington, D. C.

Platinum and Allied Metals in 1933—advance summary, 5 p. Section of Publications, U. S. Bureau of Mines, Washington, D. C.

Talc and Soapstone Industry in 1933—advance summary, 3 p. Sections of Publications, U. S. Bureau of Mines, Washington, D. C.

Animal and Vegetable Fats and Oils. Production, consumption, imports, exports and stocks by quarters 1929-1933. 5c.*

Laminated Products, Report to the President, U. S. Tariff Commission, Report 82, 2nd series, 5c.*

*** Note: Where a price is given for Federal Government publications requests should be sent to the Supt. of Documents, Washington. Remittances should be made by postal money order, express order, coupons or check. Postage stamps, foreign money, are not accepted. Currency may be sent at sender's risk.**

Equipment Booklets

E232. Climax Molybdenum Co., 295 Madison ave., N. Y. City. *The Moly Matrix* is a monthly issue, reporting highlights in the case of molybdenum in industry. You are welcomed to the mailing list.

E233. Hydraulic Press Mfg. Co., Mount Gilead, Ohio. *The Hydraulic Press* is a monthly magazine devoted to telling users of hydraulic presses what is new in the H-P-M line.

E234. International Nickel Co., 67 Wall st., N. Y. City. Editorial Dept. A new booklet on the applications of Monel metal, nickel, and nickel-clad steel has been prepared especially for users of industrial processing equipment. Besides giving data on physical and mechanical properties of these materials, booklet contains considerable miscellaneous information, including instructions on the selection of suitable welding rod and other details on fabrication.

E235. Stephens-Adamson Mfg. Co., Aurora, Ill., has just published a 16-page catalog describing its Redler conveyor-elevator—a new and unique method of conveying bulk materials horizontally, vertically, up inclines and even around curves.

E236. Worthington Pump & Machinery Corp., Harrison, N. J. Leaflet W-101-B1 describes horizontal duplex piston pumps for general services, valve plate type for handling liquids at pressures up to 250 lbs. per sq. in.

E237. Worthington Pump & Machinery Corp. Leaflet L-611-B3 describes Worthington steam booster compressors.

Chemical Industries,
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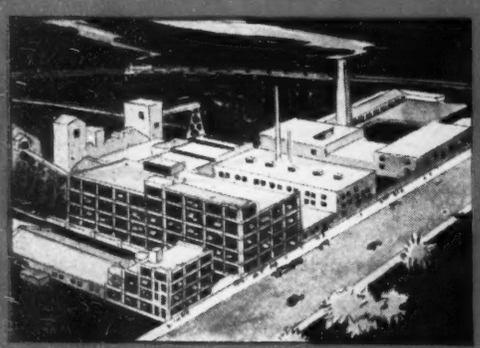
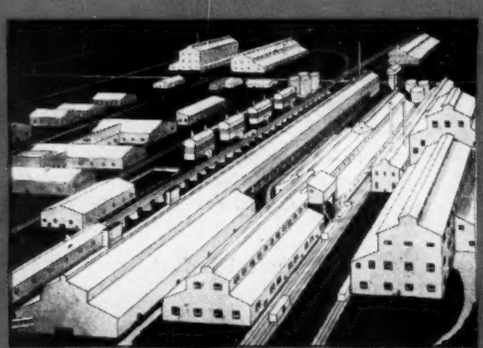
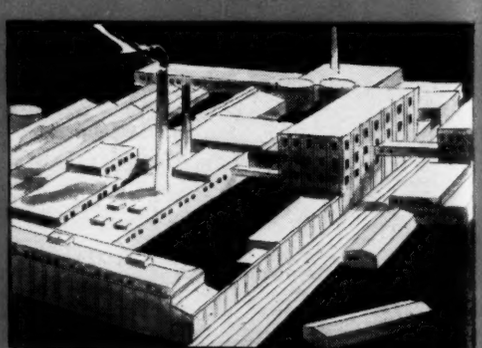


St. Louis



Anniston



Camden

Chemical Markets & News

U. S. Export and Import Figures Show Substantial Gains for 1st 6 Months Period—Further Details of International Nitrogen Agreement Disclosed

Stimulated by favorable exchange and improved conditions in many foreign markets, exports of chemicals and related products increased 31% to a value of approximately $61,000,000 during the 1st half of '34, according to C. C. Concannon, Chief of the Commerce Dept.'s Chemical Division. Quantity increases are not available in all instances but such as are recorded indicate substantial gains generally throughout the list.

Notable increases were made in exports of industrial chemicals which increased 45% over the first half of '33 to a value of $10,411,000; coal tar products advanced 12% to $7,397,700; naval stores, gums and resins, 17½% to $7,110,500; pigments, paints, and varnishes, 37% to $6,622,000; industrial chemical specialties, 21½% to $6,009,000; and fertilizer and fertilizer materials 93% to $5,960,000, statistics show.

Other important gains were registered over the first half of 1933; industrial explosives, 40%; soaps and toilet preparations, 11½%; pyroxylin products, 92%; sulfur, 30%; synthetic resins, approximately 100%; and essential and distilled oils, 27%.

Synthetic resins and pyroxylin products continue to gain steadily and may now be numbered among important chemical export items, according to Concannon. During the 1st half of '34 exports of pyroxylin products were valued at $2,084,000 compared with $1,456,000 during the corresponding period of '33, and with $3,325,700 for the whole year of '29. Exports of celluloid film base alone amounted to 1,846,000 lbs., valued at $1,630,600, during the 1st half of '34. Overseas shipments of synthetic resin products during the 1st half of '34 were valued at $163,642, compared with $85,000 for the corresponding period of last year.

Heavier Imports

Increased industrial activity coupled with heavier fertilizer consumption since the beginning of '34 resulted in an increase of 29% in the value of chemical imports into the U. S., during the 1st 6 months of the year, despite exchange unfavorable to the purchase of foreign goods.

While a part of this increase was due to higher invoice prices, several classifications, particularly fertilizers and fertilizer materials, certain waxes, gums and resins, drugs, herbs and roots, and industrial explosives, registered considerable gains in volume, statistics show.

Total imports during the 1st half of the year were valued at $46,200,000, compared with $35,900,000 for the corresponding period last year. Fertilizers and fertilizer materials headed the list with imports of 812,382 tons valued at $17,000,000—an increase of 39½% in volume and 50% in value compared with the 1st 6 months of '33.

Other important items on the import list which showed increases were industrial chemicals valued at $9,714,500, an increase of 20%; coal tar products, $5,595,000, 40%; gums, resins, etc., $4,085,500, 90%. While tung oil imports did not increase in quantity, remaining at approximately the same figure as for the 1st 6 months of '33, the value increased 56% to $2,622,300, due to higher invoice prices.

Other items on the list which registered gains were essential oils, 62%; industrial explosives; 158%; soaps and toilet preparations, 91%; matches, 37%; beeswax, 46%; carnauba wax, 226%; and paints, pigments and varnishes, 12%.

Exports of chemicals and related products during the 1st half of '34 exceeded imports by $14,670,000 in value, compared with a favorable balance of $10,501,000 for the 1st 6 months of '33.

Nitrogen Agreement

Further details of the international cartel agreement (See CHEMICAL INDUSTRIES, Aug., p. 149) are reported from abroad by Consul Sydney S. Redecker. Agreement, which will run for one year, with possible renewal for a further period, embraces virtually all world producers of nitrogen fertilizer, with the exception of the U. S., and has for its primary aim general raising of world nitrogen prices to more remunerative levels.

Under the terms of the cartel world markets will be divided into two groups. The first group includes "protected countries," or those having a synthetic nitrogen industry, and hitherto organized as the European Synthetic Nitrogen Cartel. These countries include in addition to Germany, England, and Norway, which operate as one related block, the Netherlands, Belgium, France, Italy, Czechoslovakia, and Poland. It is understood that Japan is loosely associated with the cartel but its participation is not important as yet since its nitrogen production is absorbed largely by the domestic market. Second group includes all "non-protected" or "open" and "disputed" markets dependent upon imports.

In the case of the "protected" countries, Chile has been granted for the year ending June 30, '35, a total sales quota equivalent to an increase of 20% over its actual sales to these markets during '33-'34, or approximately 50,000 metric tons of nitrogen. In the case of "unprotected" or open markets, the status quo is to be preserved as regards proportionate deliveries—each member of the cartel receiving as quota a percentage equivalent to that actually supplied each country during the past fertilizer year. Thus no definite quantities have been established for these markets. Sales to them by Chile and other members of the cartel organization will rise or fall in accordance with actual imports into the countries concerned.

An interesting feature of the agreement regarding sales quotas for the open markets is that the block of British, German, and Norwegian producers will receive a quota as one unit and may divide this among themselves according to their own arrangement without reference to other members of the Cartel, the Consul reports. Adherence to established quotas is enforced through imposition of heavy penalties payable to other pact members by those whose deliveries may exceed the prescribed allotment.

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Nitrogen prices in the "protected" markets will remain unchanged and imports will be sold at the price fixed to prevent underbidding or otherwise disturb the internal market situation. In "open" markets, however, new schedules of prices of an elastic nature will be gradually introduced, varying according to current market conditions in each country.

Obituaries

C. Nelson Alderman, 40, head of the chemistry and dyeing dept., Bradford Textile School, Fall River, on July 31. . . . Harold I. Hill, 37, Celluloid Corp., vice-president, on Aug. 17, after a lingering illness. . . . R. M. Snell, 57, formerly vice-president, Paper Makers Chemical, on Aug. 14. . . . Alexander L. MacPherson, 82, formerly manager, Pacific Oil, on July 30, at Los Angeles. . . . William H. Beers, 57, du Pont Minneapolis district manager, on Aug. 15. . . . Clyde Stone, 38, representative for Boyer Chemical, Chicago, on Aug. 18, following an automobile accident at Jeffersonville, Ind. . . . Edward A. W. Everitt, 63, former Hercules employee, and credited with the discovery of Cordite, on Aug. 22 of a heart attack at his home at Dover, N. J. . . . Charles Hoell, 56, retired president of Jefferson Chemical, Brooklyn, N. Y., on Aug. 27, at Tupper Lake, N. Y. . . . Samuel M. Moneypenny, 74, identified with the drug and chemical field for over a half century, on Aug. 29. He was a member of the firm of H. J. Baker & Bros. for years.

Foreign

Italy

Final production statistics of chemicals made in Italy in 1933 confirm earlier estimates of increased output and consumption for many products. Production of sulfuric, hydrochloric, and nitric acids in '33 was considerably larger than for '32 and '31, but still considerably under '30 and '29 figures, according to Trade Commissioner Elizabeth Humes, Rome. Practically all the industrial chemicals for which separate figures are given recorded improvement in 1933 over earlier years. Producers of electroyltic caustic soda reported increasing difficulty in competing with domestic Solvay soda and the Russian product. Domestic bromine and iodine from brine continued to supply a good part of Italian consumption, but production of synthetic camphor declined. There was a marked increase in output of methanol, 95% of which was synthetic. Dyestuffs market showed a considerable improvement over '32 with increased sales estimated at 15%; domestic production covered about 83% of consumption volume. Output of paints and varnishes was estimated at 24,600 tons, compared with 21,300 tons in '32. Superphosphates, after a very small output in '32 were up to 1,000,000 tons. Production and consumption of nitrogenous fertilizers, with the exception of a slight sag from '30 to '31, have increased every year since '29. In contrast to the improvements in these branches of the chemical industry, the pharmaceutical and medicinal specialties industry reported an unfavorable year in 1933.

COMING EVENTS

Technical Association of the Pulp & Paper Industry, fall meeting, Multnomah Hotel, Portland, Ore., Sept. 10-13.

A. C. S., 88th meeting, Cleveland, Sept. 10-14.

American Ceramic Society, glass division, Lake Kenka, N. Y., Sept. 14-16.

The Silk Parade, week of Sept. 17 to 22.

Michigan Conference on Water Purification, State College, Lansing, Mich., Sept. 19-21.

New England Water Works Association, Hotel Statler, Boston, Mass., Sept. 18-21.

American Water Works Association State Conventions: Minnesota, Sept. 20-21, Duluth; Wisconsin, Sept. 24-26, Wausau.

American Trade Association Executives, Hotel Shoreham, Washington, Sept. 20-22.

Tanners Council, official opening of American Leathers for Spring, Hotel Astor, N. Y. C., Sept. 24-25.

Advertising Specialty National Convention, Stevens, Chicago, Sept. 24-27.

National Petroleum Association, Atlantic City, Sept. 27-29.

Electrochemical Society, fall meeting, Hotel Pennsylvania, N. Y. City, Sept. 27-29.

Industrial Exposition, Convention Hall, Asbury Park, N. J., W. Earl Hopper, Director, Sept. 28-Oct. 1.

National Convention, National Association of Exterminators and Fumigators, St. Louis, Oct. 1-3.

National Safety Council, Hotels Cleveland, Statler, Carter and Hollenden, Cleveland, Oct. 1-5.

National Metal Congress & Exposition, Port of Authority Bldg., N. Y. City, Oct. 1-5.

American Society for Steel Treating, Port of Authority Bldg., W. Eisenman, secretary, 7016 Euclid Ave., Cleveland, Oct. 1-5.

Ohio Conference on Water Purification, Sewage Treatment, Deshler Hotel, Columbus, Oct. 2-5.

N. Y. State Sewage Works Association, Hotel Oneonta, Oct. 5-6.

American Photo Engravers Association, annual meeting, N. Y. City, Oct. 11-13.

National Pharmacy Week, Oct. 8-13.

Southwest Water Works Association, Hotel Hilton, Waco, Tex., Oct. 15-18.

Dairy Industries Exposition, Cleveland, Ohio, Oct. 15-20.

Eleventh Southern Textile Exposition, Textile Hall, Greenville, S. C., Oct. 15-20.

National Electrical Mfrs. Association, annual meeting, Palmer House, Chicago, Ill., Oct. 17-20.

Federation of Paint & Varnish Production Clubs, annual convention and joint show, Mayflower Hotel, Washington, D. C., Oct. 28-30. E. F. Maloney, du Pont, Chicago, chairman of the "Paint Show"; V. C. Bidlack, McCloskey Varnish, Philadelphia, chairman of the program committee.

American Gas Association Convention and Exhibition, Atlantic City, week of Oct. 29.

National Paint, Varnish & Lacquer Association, annual convention, Washington, Hotel Mayflower, Oct. 31-Nov. 3. R. W. Elton, secretary, 2201 N. Y. Ave., N. W., Washington.

National Foreign Trade Council, annual meeting, Hotel Commodore, N. Y. City, Oct. 31-Nov. 2.

American Institute of Chemical Engineers, fall meeting, Pittsburgh, November.

American Bottlers of Carbonated Beverages, 106th Armory, Buffalo, N. Y., Nov. 12-16.

National Fertilizer Association, Southern Convention, Atlanta-Biltmore Hotel, Atlanta, Nov. 12-14.

American Society of Mechanical Engineers, annual meeting, N. Y. C., Dec. 3.

Eleventh National Exposition of Power & Mechanical Engineering, Grand Central Palace, N. Y. City, Charles Roth, Manager, Dec. 3-8.

Third National Knitwear Industrial Exposition, Grand Central Palace, N. Y. City, A. B. Coffman, Manager, Feb. 11, '35.

American Ceramic Society, Hotel Statler, Buffalo, Feb. 17-22, '35.

LOCAL TO NEW YORK

Oct. 5, joint meeting 4 technical societies, N. Y. Section, A. C. S., in charge.

Nov. 9, joint meeting, Society of Chemical Industry in charge, Chemical Industry Medal.

Secretaries of Chemical Associations and Groups allied to chemistry (also the process industries) are urged to make use of this column.

* Chemist Club unless otherwise stated.

France

Urea manufacture is started by Compagnies des Produits Chimiques et Electrométallurgiques Alais, Froges et Camargues at their works at Péchiney (France).

German Notes

I. G.'s quarterly report indicate 4,000 new employes, better demand for chemicals, rayon, benzol, but dyes unchanged . . . Despite difficulties, Schering-Kahlbaum obtained its share of world trade, management states. . . . Westergeln Alkali Wks. reports Potash Syndicate Sales rose during 1st 5 months of '34 to 642,182 tons of pure potash, against 515,835 tons in similar '33 period. . . Leading German potash authority estimates German Syndicate sales of 1,100,000 metric tons K_2O this year, compared with 940,000 in '32; 847,000 in '31; and 964,000 in '30. Price cuts, caused by severe competition, more than offsets higher tonnage benefit . . . Essener Steinkohlen Bergwerke, Essen, is now producing ammonia-lime (15-17% N and 30% calcium carbonate).

Foreign Notes

Spanish potash exports for 1st 5 months of '34 total 160,780 metric tons, as compared with 64,678 in corresponding '33 period. U. S. took 64,416 tons. . . France held no. 1 position in '33 bauxite production. . . Germany, in desperation over her unfavorable trade balance, is turning to her chemists to solve the problem. They are asked to produce synthetically many of the commodities now imported.

News Oddities

Arthur Wilson, Cleveland steel chemist, arrives in irons from Trinidad to answer a murder charge. . . . Robert H. Stevenson, assistant to the chief engineer at Oldbury Chemical's Niagara Falls plant, is missing. . . . The Farmers Deposit National Bank of Pittsburgh is running a series of "ads" in *Fortune,* each one devoted to a specific industry. Copy for September deals with the chemical field and chemists and focuses attention with "Miracle men?

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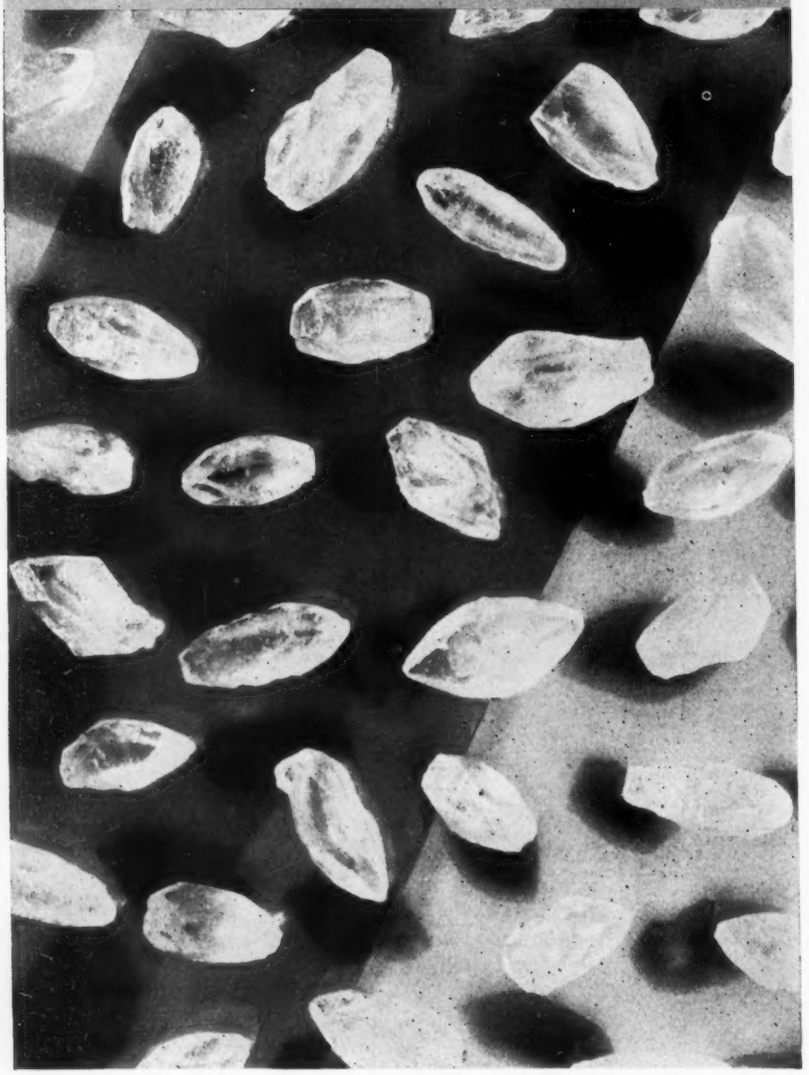

THE GOLD MEDAL STANDARD

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That's what they seem . . ."—referring to the chemists, of course. Ketchum, MacLeod & Grove, Pittsburgh advertising agency (they have Koppers, also Jones & Laughlin as clients in the chemical field) are the originators of the idea. . . . Prof. Helen L. Wikoff of Ohio University reports that sex is barring women from jobs in chemistry.

Personnel

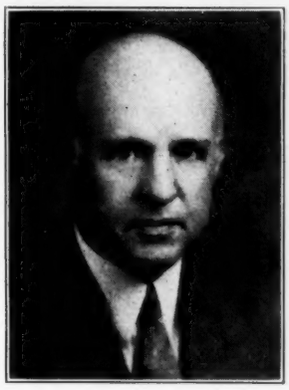
Philadelphia Quartz's Carl F. Wolcott, formerly assistant sales manager, is now at Philadelphia in charge of company's field force and will aid development of sales through P. Q. jobbers. . . . George H. Boehmer is Celluloid's new general manager; R. S. Gavitt succeeds Mr. Boehmer as director of sales of the sheet, rod and tube division; and E. W. Ward becomes Chicago manager, Mr. Gavitt's former position. . . . H. A. H. Pray is now an assistant physical chemist at Battelle Memorial Institute, Columbus, Ohio. . . . H. A. Noyes is now managing director of Applied Sugar Laboratories, 111 Wall st., N. Y. City. His is an interesting career in the food industries. . . . D. W. Haering & Co., Chicago water specialists, appoints D. D. Morey, formerly of Morey & Morey, Dallas, Tex., as district manager in charge of the N. Y. City office at 1451 Broadway.

Personal

Chemical Foundation head, Francis P. Garvan, protests against concluding trade agreements with countries which have defaulted in their debt payments unless provision is made for the payment to American holders of these defaulted securities, whether governmental or private. . . . Cyanamid's Childs was very much in the public eye early in August when he succeeded "Al" Smith as chairman of the N. Y. City Charter Revision Committee, following the latter's explosive resignation. . . . Dr. E. F. Armstrong is now chairman of the British Standards Institution. He is well-known in this country. . . . George A. Whiting's *Sunny* is a winner over a 14-mile course at Patapsco River. He is president, Standard Phosphate & Acid Wks., Baltimore, and an outstanding yachting enthusiast. . . . C. Wilbur Miller, former Davison Chemical president, is out to be the Senatorial candidate on the Republican ticket in Maryland this Fall.

On the "Sun-Deck"

K. B. Bauer, director, Transatlanische Handel-Maatschappij, Hamburg exporter and importer, arrives via the *Berengaria,* and makes his headquarters with Philipp Bauer Co., N. Y. City. . . . L. C. Green, Guignon & Green, N. Y. City



Cyanamid's Huntington—He and N. F. A's Brand were BREMEN *shipmates*

naval stores brokers, is back after an extended vacation. . . . N. N. Dalton, Glycerine Producers' Association's research director, and former P. & G.'s vice-president in charge of production, is back after study of European glycerine markets. . . . Edgar M. Queeny is an August arrival via the *Bremen.*

Also—

Mr. and Mrs. Charles J. Brand arrived on the *Bremen* Aug. 23. They were gone just 34 days. Warner D. Huntington, Cyanamid, and Mrs. Huntington are *Bremen* "customers" also. Reports the N.F.A. secretary: "Generally speaking, Europe gives the impression of being in a more prosperous condition than the U. S. . . . Conditions in Italy are excellent despite many difficulties. Premier Mussolini has done a remarkable job. . . . Conditions in Germany appear confused and discouraging, largely, because of the unfavorable trade balance." . . . E. L. Cale, Wessel Duval, is another fertilizer executive just "off the European gangplank." He was gone over 2 months and spent most of it in London. . . . And bound in a South American direction is Dr. Henry A. Gardner, director of the Scientific Section of the N.P.V. & L.A., for special botanical study in relation to the paint and varnish field. . . . And bound eastward on the *Champlain* is Spencer Kellogg, Jr., and his bride, to be gone for several weeks "doing" London, Paris, etc. . . . Benjamin H. Brewster, Jr., Baugh Chemical, is now on the continent accompanied by Mrs. Brewster.. . . . Dr. J. V. N. Dorr returns Sept. 11 on the *Bremen.* This is the 2nd trip for him this summer. Anthony Anable, Dorr Co. publicity director, accompanied Dr. Dorr on the 1st.

Foreign Trade

Depreciated currencies and changing economic conditions have resulted in many modifications in world chemical trade. While the U. S. retained its position as 2nd largest exporter of chemicals, following Germany, during 1st half of the current year, it lost its position as the world's chief importer of chemicals to the United Kingdom.

Analysis of trade in chemicals and allied products in countries where data is available for the 1st half of '34, shows that all made heavier purchases than during the corresponding period last year, increases in value ranging from 1% in Switzerland to 34% in the United Kingdom and all such countries except Germany and the Netherlands sold more abroad.

Converted to dollars at the average rate of exchange, Germany's exports of chemicals were valued at $117,700,000 for the 1st 6 months of '34, a decline of 3% compared with the corresponding period last year, while imports increased 15% to $43,400,000. Exports of chemicals from the U. S. increased 31% to $61,000,000, and imports increased 29% to $46,200, exports from the United Kingdom increased 7% to $58,400,000, and imports, 34% to $54,200,000; Belgium exports increased 5% to $28,500,000 and imports, 15% to $22,500,000; Switzerland's exports increased 7% to $19,000,000 and imports, 1% to $12,500,000.

Netherlands Setback

The Netherlands suffered a considerable setback in exports, the decline being 12% to $19,700,000 but its imports increased 25% to $28,100,000 compared with the 1st half of '33. This reversal has led the Dutch Government to limit the importation of various chemicals which are produced domestically, thus changing its traditional policy of many years. While depreciated currencies accounted for a considerable part of the value increases noted in the chemical trade of the countries mentioned, majority had volume increases as well.

United Kingdom imported larger quantities in raw material lines, such as phosphate rock, pyrites, sulfur, gums and resins, particularly rosin and shellac, linseed oil, turpentine, and other industrial chemicals. Among exports, which there were no outstanding changes, coal-tar dyes, enamels and paints, and medicine showed upward trends, and the trade of the United Kingdom with Empire countries, especially Canada and South Africa, was larger. U. S. imports of fertilizers, many industrial chemicals, gums and

resins, and camphor were heavier and exports of sulfur, benzol, agricultural insecticides, phosphate rock, paints, and many finished products contributed to quantity increases. Noteworthy in Germany's chemical trade were heavier receipts of crude raw materials, larger medicinal exports, and an advance of 21% in the tonnage of coal-tar dyes shipped abroad. Copal gum, one of the largest items in the export trade of Belgium, increased considerably.

Interchange of chemicals between United Kingdom and the U. S. was larger in the 1st half of '34 than in the 1st half of '33. Items imported from the U. S. into United Kingdom, which increased in quantities in '34, were sulfur, rosin, turpentine, and carbon black. Of the exports to the U. S. from the United Kingdom, creosote-oil shipments more than doubled. Although other gains were made, details are not available.

Associations

Medalists

For achievements of world influence in agricultural chemistry, Dr. Jacob Goodale Lipman, Dean of Agriculture at Rutgers and Director of the New Jersey Agricultural Experiment Station, is awarded the Chandler Medal of Columbia for '34. Dr. Lipman, characterized "as a great captain among scientific investigators," is a native of Latvia, and began his career in the science of soils on a New Jersey farm. The medal will be formally conferred at a national assembly of scientists at Columbia in November.

Picked as the most promising young chemist in this country Dr. C. Frederick Koelsch of the University of Minnesota will receive the $1,000 Langmuir prize for 1934 at the A. C. S. meeting at Cleveland.

Safety

With "Let's Tell the World About Safety" as their battle cry and official slogan, some 6,000 to 8,000 delegates will convene in Cleveland, Ohio, Oct. 1, to 5, for the 23rd Annual Safety Congress and Exposition. They will represent industrial, educational, civic and official bodies from all parts of the U. S. and several foreign countries. To those in the chemical industry a specially attractive program is offered.

Double Purpose

The opening of a program designed to reduce present supplies of edible fats and oils, estimated at around a billion lbs., and at the same time increase consumption of these commodities and give assistance to 3,000,000 dairy, live stock and cotton farmers, is announced by the newly organized Institute of American Fats and Oils.

Heading the institute is C. O. Moser, a former cotton co-operative official. F. E. Mollin is vice president; C. G. Henry, treasurer; Rae Epstein, secretary and assistant treasurer.

Association Personals

N. F. A.'s Charles J. Brand will address trade association executives Sept. 21 when they gather in Washington for their annual convention.

Past-President W. H. Fulweiler, chemical engineer, United Gas Improvement, Philadelphia, is elected vice-president of the International Association for Testing Materials.

Customs and Tariffs

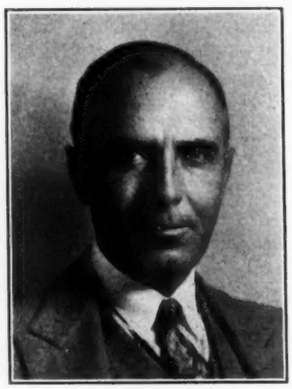
Increasing foreign competition has led the Dutch Government to limit importation of various chemicals into the Netherlands, which are domestically produced.

U. S. Customs Decision

Monteverde, Rolandellie & Parodi, Inc., San Francisco—Merchandise entered as powdered saffron and claimed free as a dyeing or tanning material was classified as a non-enumerated manufactured article at 20%. Because of the presence of a percentage of oil it was held to be excluded from the free provision and the protest is overruled.

Companies

H. L. Derby, American Cyanamid & Chemical Corp. president, announces that, for the purpose of effecting closer coordination of their activities, businesses of the following companies in the Cyanamid group will be merged with, consolidated into and operated as divisions of American Cyanamid & Chemical Corp:



Cyanamid & Chemical head announces further consolidations

American Cyanamid Sales Co., American Powder Co., Catalytic Process Corp., Fumigation Service, Inc., Fumigators Supply Co., Inc., General Explosives Corp., Gypsteel Construction Co., Inc., Maryland Chemical Co., Inc., Owl Fumigating Corp., The Selden Co., The Selden Research & Engineering Corp., Structural Gypsum Corp.

Blanc With African Metals

M. Blanc, former president of International Selling Corp., now heads a chemical department for African Metals Corp. with N. Y. City offices. African Metals will continue to represent Union Miniere du Haut Katanga and Societe Generale des Minerais, Brussels, and will sell arsenic, blue vitriol and other metallic chemicals. Company also is representing Societe Anonyme des Produits Chimiques de Tessenderloo of Belgium, for the sale of fertilizer materials and Union Chimique Belge of Brussels, for the sale of many other chemicals.

Synthetic "Sandwiches"

One who satisfied his inner man with rubber "sandwiches" would likely pay for his indiscretion immediately. But in the rubber sandwiches Synthane Corp. (Oaks, Penna.) makes there is "something to chew on"—especially for the engineer or product designer. Sheets of Synthane laminated bakelite and rubber are bonded together alternately to combine extreme resiliency of rubber with the strength, rigidity and very desirable electrical and solvent resisting properties of Synthane. Number and thickness of the individual layers may be varied indefinitely to produce a section of any given thickness or characteristics.

Possibilities for the new material readily suggest themselves, particularly where quietness and strength are significant factors, as for example—vibration absorbing mountings for motors in electric refrigerators, washing machines and fans. Or as trays or tables in restaurants where the surface must not only be beautiful and stainless but absorb the clatter of dishes as well.

New Glyco Specialties

Commercially pure glyceryl mono stearate and glyceryl mono ricinoleate are now being produced for the 1st time in this country by a new synthetic process, by Glyco Products, Bush Terminal, Brooklyn, N. Y. Purity of these products is such that they may be used in food, drug and cosmetic preparations. A new catalog listing their properties, as well as glycol esters, water soluble resins and a new low-priced

"wetting-out" agent, is available to all chemists and technical workers.

New Cold-Molded Material

A new grade of Cetec, cold-molded, designated as No. 1389 and intended especially for insulating applications that must have both good heat resistance and fine appearance, is available as a new product of G. E. Plastics Dept., Lynn, Mass. It is particularly well-suited for such applications as electric-iron heat-control knobs, cord-connector plugs, etc.

Silica Gel Air Conditioning

Bryant Heater Co., Cleveland, Ohio, largest merchandising organization in the gas house heating and air conditioning field, announces that it has acquired exclusive rights to Silica Gel and all Silica Gel equipment patents for comfort air conditioning.

New Desiccant

Drierite is a new drying agent and desiccant with interesting properties and placed on the market by W. A. Hammond, Yellow Springs, Ohio.

And, in Closing

Titanium Alloy Mfg. Co., appoints G. S. Robins & Co., St. Louis dealer, south central states representative on TAM ceramic materials. Frank G. Jaeger, formerly president, Superior Enamel Products, will handle ceramic materials for Robins. . . . The Udylite Process Co., name is now The Udylite Co. General offices and laboratories are located at 1651 E. Grand Boulevard, Detroit. . . . Carbide's laboratory is now centered at Niagara Falls. Over 100 persons are affected by the change from Long Island City. . . . S. Isaacs & Co., N. Y. City, manufacturer of glues and gelatins, is now A. F. Islan Co. . . . Varcum Chemical, Niagara Falls, N. Y. resin manufacturer, opens a N. Y. City office at 154 Nassau st., in charge of J. H. Pettit.

Moves

Morris Kampf, consultant, to 41 Union Square, N. Y. City, telephone, Gramercy 7-0177. . . . Michigan Alkali's general sales department offices are now in the Lincoln Bldg., N. Y. City—address, 60 E. 42 st., Vanderbilt 3-6820.

Nuodex Products, Inc., is in its new home, a much larger plant, located at 312 Division st., Elizabeth, N. J. Nuodex produces—paint driers and other paint specialties.

Traffic

While the I. C. C. is not expected to "rubber stamp" railroads' request for tariff increases, an early and favorable ruling is anticipated in most Washington quarters. A ruling in December, with increased rates effective early in '35, is thought to be quite likely.

New Construction

Monsanto purchases a half block on 2nd st., St. Louis, close to the present plant, for a reported price of $49,500. Property will be kept for future expansion. Work on the $250,000 office building is progressing rapidly.

Construction Notes

F. S. Royster Guano, Baltimore, plans one-story addition. . . Merck's addition at Rahway for organic chemicals is being erected by Salmon Schrimshaw Construction, North Arlington, N. J. . . Turpentine & Rosin Factors, Inc., is erecting additional storage facilities at Valdosta, Ga. . . Construction is under way on Gulf Oil's new research laboratories at Harmarville, Pa., at a cost estimated at $400,000. . . U. S. I. is granted permission to build 2 additions to it's Baltimore plant.

Washington

NRA Reorganization

NRA announces as part of the general program of improvement, a virtually complete realignment of its Code groupings to conform to a new fundamental classification of all industries and trades. This basic classification, completed after studies of many months, assigned by General Hugh S. Johnson to a specially created economic unit, corresponds closely to the groupings of the Census Bureau and of the International classification, but is more thoroughly developed than either. Keynote of the classification is recognition of 22 classes within which every known industry or trade has a definite place.

Effect of the classification on NRA's administrative machinery will be: 1. Assembling of codes into 22 industry groupings under the existing industry divisions. Sections thus assembled have been transferred among the divisions so that each contains only the most closely allied groups defined by the new classification; 2. Transfer of personnel in many cases so as to keep experienced men with their codes; 3. Two or 3 master codes will have their component supplements distributed among several deputies, but always under the direction of a single division head.

Reasons for the changes are: 1, assurance that allied lines receive identical treatment on common problems; 2, reduced administrative overhead by eliminating duplication of functions and studies; 3, opportunity for many allied codes to merge by voluntary action of industry for greater economy in the self-government function; 4, cleared perspective on the several classes of codes, with consequent greater definition of the problems to be solved by both Government and industry in development of code law and its application, and elimination of overlapping definitions in industry codes; 5, simplicity of line-up for more accurate statistics on industries and trades.

Aim—Simplification

Eventual expectation is that the 22 sections will fit into 10 or 11 industry divisions. Already, within the last few days, 2 new divisions have been created in line with the plan. First, covering Public Utilities, Transportation and Communication is under Leighton H. Peebles, Acting Divisional Administrator. Another probably will include all Textile Producing and Clothing codes and the Leather and Fur codes.

According to the new groupings chemicals, paints and drugs will be grouped together as one section of 11 in the producing industries fundamental group. Probable ultimate line-up of industry divisions will be but 10 in number and chemicals, drugs, paints, paper and rubber will be grouped together.

It is not proposed by NRA that industries consolidate their codes into the 22 master classifications, nor is there intended any direct link or liaison but the whole plan is based on natural definitions of industries and trades as written by the industry and trade group thereunder, within industrial channels to be erected to draw them together.

Code mergers which are expected to result eventually will take place between units of almost identical economic interest whose separation at this time is based on arbitrary and personal rather than economic reasons. A tentative objective has been an overall total of about 250 pacts instead of the present 682. Trade associations will be encouraged to retain separate identities even when the code group is merged. At present some codes actually embrace as many as 30 separate trade associations, each collecting statistics and carrying on technical work under the general supervision of the master code group.

Earlier Than Expected

Unexpectedly Aug. 31 NRA announces formation of another industrial division in its organization set up. Captain

Joseph F. Battley, heretofore Deputy Administrator, will have charge of the new division as acting division administrator. It will embrace the codes comprising chemicals, drugs, paints, paper and rubber in all of their various processings and forms of manufacture.

This action is in line with the policy of Administrator Hugh S. Johnson to bring under one administrative head certain designated groups and their allied industries. In this re-classification and allocation, codes dealing with the chemical, drugs and paints industries will be assigned from Division No. 3; those dealing with paper and its products, also from Division No. 3, and rubber and its products from Division No. 1. As soon as the re-classifications and groupings are completed, the existing and the new divisions created will be re-numbered.

In transferring the various codes to this and other new divisions, it is the purpose of the Administration to allow the personnel that has been handling them to remain intact. In the new division there will be approximately 138 codes, including supplemental codes. Construction code and its various industries will remain in Division No. 3 under Major George L. Berry.

Captain Joseph F. Battley, named as acting division administrator, is a graduate of the Harvard University School of Business Administration and of the Army Industrial College. Among his military assignments have been that of Executive Officer of the Chemical Warfare Service at the Edgewood Arsenal, Edgewood, Md., and Executive Officer of the New York and Pittsburgh Procurement Service. He was on duty in the office of the assistant secretary of war in Washington when, in July 1933, he was borrowed for service with the National Recovery Administration, where he has since been on duty. He has recently been deputy administrator in charge of the chemical section of Division No. 3, under Division Administrator Major George L. Berry.

Budgets

Code authorities requesting budget approvals include: agricultural insecticide and fungicide $25,000; carbon dioxide $31,000.00; feldspar $26,880.00; bleached shellac $15,432.00; printing inks $55,600; dry colors $15,000; soap and glycerine $58,250; paints, varnish and lacquer $73,150.88; fertilizers $380,000.

Personnel

Four newly appointed members of the code authority for the fertilizer industry are accorded official recognition by the NRA.

New members are George V. Savitz, International Agricultural, Boston, Mass.; W. T. Wright, F. S. Royster Guano Co., Norfolk, Va.; J. S. Coale, I. P. Thomas & Son Co., Philadelphia, and A. L. Ivey, Virginia-Carolina Chemical. Ivey and Savitz succeed L. E. Britton and George A. Holderness, both resigned.

Administration Members

Edward E. Ames is Administration member of the code authority for linseed oil manufacturing; Major A. B. Quinton holds a similar position on the salt producing industry code authority.

Codes

Hearing on proposed code for the manufactured gas industry is scheduled for Sept. 17, room 3309, Dept. of Commerce Bldg., Washington, before Deputy Administrator Peebles.

Liquefied Gas

Code authority for the liquefied gas industry is asking permission to draw up a budget.

CO_2

Administrator Johnson approves amendments to the supplementary code of fair competition for the carbon dioxide division of the chemical manufacturing industry enabling the Code Authority to prepare a budget and provide a basis of contribution to the same by members of the industry, revise the price list section, and establish a new Code article to be known as "Trade Practice Provisions—Price Cutting."

Code Authority proposes that its chairman act as confidential and disinterested agent of the Code Authority, with whom members of the industry might file price lists. This, according to the statement of the Administrator in his letter to the President, "has been changed back to the Administration's more general proposal, leaving it to the Code Authority to designate a confidential and disinterested agent because the designation of a particular individual or agency in a Federal statute is not considered advisable, owing to possibility of change."

Briefly Summarized

NRA approves application to place fabric cleaner manufacturers under shoe polish division of the code for shoe and leather finishes. To give fabric cleaners representation, authority membership is increased to 14. NRA's approval is given to the processed or refined fish oil code and it is now effective . . . Code authority for furniture and floor wax and polish industry asks for termination of contribution exemption.

Washington Notes

John W. Finch now directs the Bureau of Mines despite opposition by Postmaster Farley to the appointment. Aid to Hoover in '28 is the reported reason for Farley's protest to the President . . . U. S. Civil Service is looking for an associate chemist on insecticides for the Bureau of Entomology and Plant Quarantine, Dept. of Agriculture ($3,200 less economy deductions).

Divisions of Soil Fertility and Soil Microbiology are now with the Bureau of Plant Industry instead of the Bureau of Chemistry and Soils and the Insecticide division of the Bureau of Chemistry and Soils is now assigned to the Bureau of Entomology and Plant Quarantine.

Ink Sales

Increased exports of printing and lithographic inks reflect improvement in printing and publishing business throughout the world, and particularly in China, according to C. C. Concannon, chief of the Commerce Dept's Chemical Division. More than 2,566,500 lbs. of such inks, valued at $402,500, were shipped to foreign countries from the U. S. during the 1st half of '34 an increase of 29% in quantity and 27% in value compared with corresponding period of last year. Production of printing and lithographic ink in the U. S. during the past 31 years, keeping pace with the growth of the publishing business in this country has increased from an annual output of from 3 to 32 million dollars and in '29 was valued at $43,000,000.

Research Activity

A pick-up in world activity in chemical research is disclosed by Prof. E. J. Crane of Ohio State University, editor of *Chemical Abstracts,* in which the findings of the international science reporting system of the A. C. S. are assembled. Digest of chemical papers appearing in 2,000 scientific and technical journals of the leading nations numbered 18,664 during the 1st 6 months of '34 as against 17,648 in the like period of '33, according to the report.

Pricing Conference

Members of various industries located in the metropolitan area will be invited by the Pricing Committee of the N. Y. Board of Trade to attend a series of conferences at which methods for properly pricing the goods or services supplied by the industries will be discussed.

ADVERTISING PAGES REMOVED

Heavy Chemicals

Southern Alkali Ships

It does not seem so many months ago that ash and caustic consumers heard whisperings of a truly revolutionary move in alkali production—a new plant to be located in the very heart of the South. Then came confirmation—a new name in alkalies, as well as a new plant—Southern Alkali, formed jointly by American Cyanamid (determined to add alkalies to its rapidly increasing diversified lines) and Columbia Alkali, long known and respected in the alkali field. Announcements mentioned Corpus Christi as the plant site. Since then, 2 other alkali producers, Mathieson and Solvay, have also turned to the South for further plant expansion.

Plant construction is no longer the long drawn out affair of earlier years, and after what appears to be but a very short period of months comes the announcement that Southern Alkali is in production and ready to ship from Corpus Christi. That which was almost unbelievable less than 2 years ago is now a reality.

Plant site is adequately served by both rail and water transportation facilities. Three railroad trunk lines bring it into close contact with Gulf Coast and Mid-Continent concerns. It has the further advantage of being located on tidewater, with its own port and turning basin. A new 30-foot channel that has just been dredged enables ocean-going vessels to dock right at the plant site. This means unexcelled export and shipping advantages and—for refineries and other industries along the Coast—more favorable freight rates.

All the requirements for the manufacture of alkalies are within easy access of the Company plant. These include: salt, limestone, coke, oyster shells and power. Salt is piped from Company wells 60 miles away by natural gravity flow and stored in an immense open reservoir. Coke and limestone are shipped to the plant from nearby Southern points. Oyster shells, which are valuable as a source of lime, are obtainable in abundance from the large oyster shell deposits in Nueces Bay.

Vital to the success of any industry that aims at lower production costs is cheap power. And the Corpus Christi site not only has tidewater and convenient raw materials—but natural gas as well. Company wells are located only 6 miles away. The fuel they supply produces power at a cost below the cheapest coal. A new era in the alkali industry is here.*

Important Price Changes

	Aug. 31	July 31
ADVANCED		
Antimony oxide	$0.09¼	$0.08½
Sodium bisulfite	.03¼	.03
DECLINED		
Sodium stannate	$0.33½	$0.34
Tin crystals	.38	.38¼

Quiet Trading

As August gives away to September no improvement in chemical trade over July's quiet state is discernible. Indeed, if anything, the pace is slower. Earlier predictions of a slight upturn in the last 2 weeks of August were largely predicated on a turn for the better in textiles. Not only has this failed to materialize, but, as the month closes, strike orders are in the hands of cotton workers throughout the country and desperate efforts are being exerted to carry out the silk and rayon operators too in a huge nation-wide textile strike. Once more all government mediation appears fruitless, and the situation, in all probability, will call for the President's personal intervention. Stocks of finished textiles are larger than generally believed. Manufacturers are, therefore, in a better position to resist what they feel are unwarranted and unreasonable demands. The situation looks black and the possibility of an early return to anything resembling normal withdrawals of textile chemicals seems very remote at the moment.

Tanners Puzzled

Other heavy consuming industries, are slow. Steel activity is down to a '34 low of 20%; tanning operations are seriously curtailed pending a final decision as to what is to be done with the avalanche of hides resulting from the government's drought program; paint production continues to slide down seasonably; automobile output, while ahead of August of last year, is off from the high May-July level; and the glass industry is only mildly active. Seasonal chemical items generally have enjoyed a good season, but cold weather in the last 2 weeks has exerted some effect in slowing up sales. The anticipated fall pick-up is now looked for late in September. However, despite uncertainties existing and which cannot be minimized or dealt with lightly, an under-current of optimism over the outlook for a fall improvement, prevails in most quarters. Industrial chemical prices remain stable and for the most part unchanged.

Methanol Statistics

Monthly statistics on production of crude and synthetic methanol, compiled from data received by the Bureau of the Census and the Hardwood Distillation Industry Code Authority from 36 manufacturers, are presented in the table below. These statistics represent practically the entire output of crude methanol and synthetic methanol in the U. S. The manufacturers included in the Bureau's summary on methanol for December, 1933, accounted for 79.3% of the crude methanol and 100% of the synthetic methanol shown below.

Month	Production (Gallons) Crude [1]	Synthetic
1934		
January	360,822	979,686
February	337,983	690,961
March	366,052	916,872
April	342,307	754,980
May	324,063	897,294
June	298,165	922,551
Total (6 months)	2,029,392	5,162,344

Calcium Chloride in '33

Calcium chloride production in '33 amounted to 57,813 short tons valued at $893,442, a decrease of 13% in quantity and 23% in value from 1932.

Less Copper Sulfate

Mond Nickel, is reported closing down copper sulfate plants at its Clydach works. It is stated that during the past few years the disposal, at an economic price, of such quantities of copper sulfate as are indicated has become increasingly difficult—mainly on account of the ever-increasing duty and quota restrictions imposed on its importation into the countries concerned.

Sulfur

Norwegian steamer *Tilthorn* is loading a record sulfur cargo at the Galveston loading plant of Texas Gulf Sulphur. Vessel is lifting 10,250 tons for Canadian Atlantic ports. Previous record is also held by the same ship. In May of this year the *Tilthorn* loaded a cargo of 10,231 tons which was also delivered at Canadian ports.

Jefferson Lake Oil Co., reports for 6 months ended June 30: net income after expenses and other charges, $707,436, equal after preferred dividends, to 70c a share on 914,459 common shares.

Texas Gulf Sulphur notifies N. Y. Stock Exchange of a proposed increase in authorized capital stock from 2,540,-

* Corpus Christi plant reviewed by Williams Haynes, June, p. 494; see also roto section this issue.

[1] The refined equivalent would be approximately 82 per cent of the crude production.

000 to 3,840,000 shares. It is planned to pay Gulf Oil 1,300,000 shares for relinquishing its sulfur profit-sharing agreement on certain properties.

Glass Factory Reopens

Operations at the window glass factory of Pittsburgh Plate Glass, Mt. Vernon, Ohio, are being resumed. Factory has been closed since December, '31 and the starting of the plant puts 400 men to work and relieves local unemployment to a great extent.

Heard Here and There

Brunner Mond is constructing a calcium chloride plant at Amherstburg, Ontario . . . Industria Quimica Nacional is building an alkali plant in Venezuela. Last year this country imported 1,003 metric tons of caustic and 195 tons of "bicarb". . . Carbon black is being made by a Hungarian firm, using a by-product of the petroleum refineries. Process is that of the Rumanian Ploesti Wks . . . Mathieson Alkali places it's advertising account with E. T. Howard Co., N. Y. City . . . Threatened strike at Swann's Anniston plant fails to materialize, following several conferences between President Swann and representatives of the employes. New agreement ends disagreements . . . Russia is another country now reporting carbon black production, with a plant at Ivanavo with an annual capacity of 2,500 tons now and 7,500 eventually . . . During the past year German Oriental Mining Co. shipped 37,000 tons of chrome ore from its Turkish mines.

Employment

Chemical employment figures show slight gain between June 15 and July 15, an increase of 0.8%. At the end of the period, employment stood 14.1% above the level for the corresponding date in '33. Payroll totals in factories in the chemical group increased 0.6% during the month, and stood 19.6% above similar '33 figure.

Employment, hours of work and average weekly earnings declined more than seasonally in July, according to the National Industrial Conference Board. There is every reason to believe that this trend carried through August. Manufacturing activity, as measured by total man-hours worked, declined 6.5% in July from the previous month, and was 8.2% under the July, '33 level. Seven industries, however, showed increases for July over June, that in the chemical being 2.6%.

Too Hot!

John Swann, Swann advertising manager, Birmingham, discovers N. Y. City at its hotest during the week of July 30.

Fine Chemicals

Tartrates Weak

Outstanding in fine chemical markets is a decline in iodine and iodine salts, and lower quotations for tartar chemicals. A competitive situation in the latter appears to be continuing. Japanese competition is reported the answer to lower prices for iodine salts. Several of the C.P. acids are revised upward.

Volume continues fair and further pick-up is looked for immediately following the Labor Day holiday period. Imported items are steady in the face of but very minor fluctuations in currency exchange rates. Some uncertainty seems to prevail over future glycerine prices. For the moment buyers are out of the market in many instances, waiting further developments. Tartar emetic prices remain firm in the face of lower quotations for other tartar products.

Aug. 15 alcohol producers withdrew the 3-car price concession and established the minimum carload price on the basis of one or more cars. Silver nitrate is higher, following the rise in silver. Producers are, of course, keenly watching the silver moves of the Government. Mercury remains firm and unchanged; mercurials are in fair demand.

Domestic tartaric prices are also lower; reductions amounting to 1½c on crystals and 1c on powdered and granular material. With stearates advanced, U.S.P. zinc stearate is 1c higher.

No Tariff Change

President approved, 2nd Tariff Commission report on synthetic camphor which finds that no change is required in the rate of duty under provisions of paragraph 51, Tariff Act of 1930. This paragraph provides that duty of 5c per lb. on synthetic shall be reduced to 1c if domestic consumption is not supplied by domestic production to the extent of more than: (a) 25% for the 6 months ended June 17, '33; (b) 30% for the 6 months ended June 17, '34; and (c) 50% for the 6 months ended June 17, '35.

Commission had found in its 1st investigation that domestic production during the first of the above periods substantially exceeded the 25% specified in the law. Present report covering 2nd period shows domestic production greatly exceeded the 30% specified in the law. Entire domestic output is by one manufacturer (du Pont) which started production in January, '33.

Important Price Changes

	Aug. 31	July 31
ADVANCED		
Acid, muriatic, c. p., carboys	$0.06½	$0.06
bottles	.08½	.08
nitric, c. p., carboys	.11½	.11
bottles	.12½	.12
sulfuric, c. p., carboys	.06½	.06
bottles	.08½	.08
Corn syrup, 42°	3.59	3.44
43°	3.64	3.49
Silver nitrate	.35½	.33½
DECLINED		
Acid, tartaric	$0.25	$0.26
Cream of tartar	.18¼	.19¼
Iodoform	3.90	4.40
Iodine, resublimed	1.90	2.25
Potassium iodide	1.40	1.65
Rochelle, salt crystals	.14½	.15½
powdered	.13½	.14½
Seidlitz mixture	.11½	.12¼
Sodium iodide	2.40	2.75

Jap. Camphor Exports

Japanese exports of camphor during the 1st quarter of this year had a value of 1,542,000 yen, against the 1,320,000 yen of January-March, 1933.

I & Br in '33

Production of domestic iodine in '33 was 401,525 lbs., valued at $661,289, according to the Bureau of Mines. This was 56% more than the 173,953 lbs. produced in '32 and more than 40% above the $395,951 value of the previous year's output. Bromine production amounted to 10,147,960 lbs. valued at $2,040,352. This is an increase of 77% in quantity and 72.5% in value compared with the production in 1932.

Corn Grind

The Corn Industries Research Foundation reports total July grind of 11 refiners of products of corn of 5,721,252 bu., a decrease of about 13% from July grind of '33. For 7 months total grind was 38,574,449 bu., compared with 44,572,975 for this period last year, a decrease of 13%. The '34 corn crop is now estimated in the latest government report at the sensationally low total of 1,607,000,000 bu., smallest since '01.

New Companies

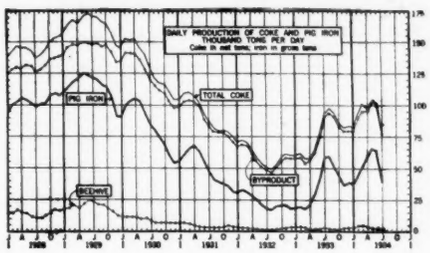
Plastic Novelties, Inc., $20,000. Filed by Chas. Schwartz, 16 Court st., Brooklyn. Sul-Carbo Chemical, Inc., Tampa, Fla., to deal in chemicals. Incorporators: B. J. Carey, H. Eckhoff and E. B. Welch.

Delaware Rayon, closed for repairs, is again operating.

Coal Tar Chemicals

Coking Operations Off Sharply

Situation in coal tar chemicals remains unaltered from last month. Coking operations declined sharply in July and August figures are expected to show a



Bureau of the Census

continuation of this trend. Toluol, benzol and phenol are still in good demand. Intermediates and dyes are moving slowly at the moment and any improvement is contingent upon an early settlement of the textile strike. Prices are firm and generally unchanged.

Coke production dropped sharply in July, to the lowest level since that of June, '33. July daily rate of 78,581 tons, from byproduct and beehive plants, was 22.7% below that of June and 15.5% less than rate prevailing in July a year ago. Production of byproduct coke for the 31 days of July amounted to 2,381,459 tons, or 76,821 tons per day. Compared with June-July rate decreased 22.9%. Daily average of pig iron production decreased 38.6%; reflecting this trend, coke production at furnace plants decreased 31.8%, while that at merchant plants declined but 4.1%. Of the 91 byproduct coke plants in existence at the beginning of '34, 83 made coke during July, 62 were recovering ammonia in the form of ammonia liquor or sulfate, and 52 were making benzol or motor benzol.

July synthetic dye importations show a slight gain over the previous month of 16,395 lbs., and an increase of $6,000 in. value; total figure for July being 178,350 lbs., against 161,955 with a value of $256,213, against $230,303 for the previous monthly period. July imports show a decrease of more than 65% in pounds from the same month a year ago; also a decrease in value of approximately 55%. But imports from the 1st 7 months of the year, while more than 25% lower in volume than those for the same period of last year, were almost 6% greater in value.

It Began in '14

Marked trend in U. S. towards self-sufficiency with regard to synthetic coal tar dyes is strikingly reflected in imports of these products since the beginning of '34. From January to July inclusive, imports totaled 1,823,000 lbs., compared with 2,477,000 for the 1st 7 months of '33, but the value increased from $2,477,000 to $2,631,400.

Dye Origins

Bulk of American dye imports originate in Germany and Switzerland with small quantities coming from England and elsewhere. There is a tendency of late for Switzerland to supply the greatest share. In July, '34, 54.6% came from Switzerland, compared with 42.9 for the same month last year, while the share coming from Germany declined from 55 to 44%.

There has also been a marked decline in imports of aromatic chemicals of coal tar origin. During the 1st 7 months of the year receipts for consumption amounted to only 16,273 lbs., valued at $31,000 compared with 26,000 lbs. valued at $41,000 for the same period last year. Imports of medicinals, photographic developers, intermediates, and other coal tar products increased from 980,000 to 1,019,000 in quantity, and from $570,550 to $968,000 in value.

Coal Tar Statistics

	July 1934	July 1933	June 1934	Calendar yr. to date 1934	Calendar yr. to date 1933
Coking coal—by-prod. ovens, tons	3,448,014	4,057,375	4,378,569	28,320,346	19,842,074
Stocks of coke, by-prod. ovens, tons	2,311,650	2,951,206	2,047,142	.....	.....
Coke production, by-prod.	2,381,459	2,797,316	2,989,875	19,376,506	13,705,567
Benzol production, gals.	5,120,000	6,839,000	6,724,000	43,151,000	31,674,000
Light oil production, gals.	10,137,161	12,415,567	12,872,992	83,261,817	60,716,746
Tar output, gals.	33,928,457	37,327,850	43,185,218	278,672,203	182,547,080
Ammonium sulfate, prod., tons	44,756	47,613	50,485	331,534	227,847
Coal tar exports, 000 omitted	.....	.....	$1,257	.....	.....
Coal tar imports, 000 omitted	.....	.....	$746	.....	.....

Imports	July Quantity	July Value	June Quantity	June Value	May Quantity	May Value
Creosote oil, gal.	4,571,624	$419,605	2,686,656	$233,708	1,008,515	$67,551
Cresylic acid, gal.	72,646	23,229	105,140	34,664	92,454	32,844
Naphthalene, crude, lbs.	5,961,191	83,671	3,698,274	54,117	5,212,537	79,239
Crude coal tar (bbl.)	14,752	24,209	7,650	13,651	12,825	21,148
Coal tar pitch (bbl.)	45	324	.....	.....	.....	.....
Other distillates, n.s.p.f.	55,427	1,337	67,322	1,931	89,600	4,420
Anthracene, crude	.....	.....	22,220	394	20,371	306
Benzol, gal.	.....	.....	4,939	691	79,017	9,944
Pyridine, gal.	.....	.....	93	277	14,597	15,715

Great bulk of coal tar dyes, it is pointed out, in a review of the situation by C. C. Concannon, Chief of the Chemical Division, Bureau of Foreign and Domestic Commerce, are received at the port of New York, where considerable quantities are held in bonded customs warehouses until such time as needed for consumption. A total of 1,203,800 lbs. were being held at the end of June.

Uses for Mercury

Mercury vapor is employed for such industrial purposes as distillation of betanaphthol and sulfonation of naphthalene. Sun Oil uses it for distillation of lubricating oils.

Solvents

Methyl Alcohol Denaturant

After much uncertainty it now appears that Treasury officials will give further consideration to the plea for restoration of wood alcohol as a denaturant for completely denatured alcohol. Treasury Dept. reversed itself in the matter early in August, 1st granting permission and then suddenly withdrawing it. Additional evidence in support of use of wood alcohol was submitted Sept. 6 by Attorney McGovern and included a communication from Dr. M. C. Whitaker, now Cyanamid, but formerly U. S. I. vice-president and president of its subsidiary chemical company, and considered an outstanding authority in alcohol questions.

Trichlorethylene Not "Dumped"

Treasury Dept. gives French trichlorethylene clean bill of health, investigation failing to show evidence of "dumping."

A Job Well Done

James P. McGovern, general counsel to the Industrial Alcohol Institute, performs a noteworthy feat in digesting data on the alcohol laws, etc., in the various states. His labors are contained in a 237-page mimeographed report now being distributed.

British Specifications

Four further British standard specifications have just been issued in connection with the series of nationally agreed standards for solvents. These specifications are for diacetone alcohol (No. 549), normal butyl acetate (No. 551), amyl acetate (No. 552), and ethyl acetate (No. 553), and have been prepared by the special solvents committee, Chemical Division of the British Standards Institution, London.

Alcohol Code Approval

Administrator Hugh S. Johnson approved on Aug. 22 supplemental code of fair competition for the industrial alcohol industry, a division of chembical manufacturing. In his letter to President Roosevelt giving a resume of the code, the Administrator states that the labor provisions of the parent code are included in the supplemental code.

In the matter of trade practices, he points out that some of the Code's provisions are aimed at correcting destructive price competition existing in this industry and were given a great deal of consideration in order to harmonize them with Administration policy. Provisions concerning open filing of prices are in accord with the Administration's policy announced on June 7, 1934.

Price Filing

In the article relating to price filing, it is provided that "Inasmuch as certain products of the hardwood distillation industry, namely, methyl alcohol for anti-freeze, are used for identical anti-freeze purposes, as ethyl, isopropyl and various types of methyl alcohol as covered by this code, the filing of prices on the last named products . . . is not to become effective until and unless a provision for the filing of prices of the above named products which are covered by the hardwood distillation industry code . . . are incorporated in that code. When this is accomplished, price filing under each code shall be exchanged. . . ."

"Obviously," says the Administrator, "the open filing of prices by the industrial alcohol industry on products which are directly competitive with almost identical products produced by the hardwood distillation industry would not be any aid to them in reducing or knowing about destructive price competition unless the open filing of prices were adopted also by the hardwood distillation industry for the products referred to. For the same reason, the other fair trade practices are not to become effective in respect to the products of the industrial alcohol industry which are competitive with methyl alcohol sold for anti-freeze by the hardwood distillation industry, unless the other trade practice provisions specified in the article are also adopted by the hardwood distillation industry."

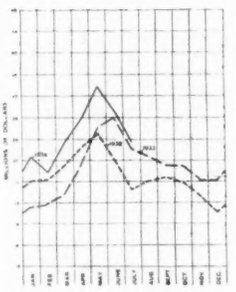
A further section of the same article provides that "The Code Authority, by a two-thirds vote, may at any time establish a uniform contract agency subject to the approval of the Administrator."

This provision is stayed pending further consideration by the Administrator "of the advisability of having uniform agency contracts provided in codes."

Paints, Lacquers and Varnish

Retail Sales Fair

Statistics on sales of paint, varnish, and lacquer, based on data reported to the Bureau of the Census by 586 identical establishments are presented in the table below, which shows by months total volume of sales reported, volume reported by 242 establishments which are unable to classify their sales into trade and industrial, and volume reported by 344 establishments which have classified their sales into trade and industrial (paint and varnish, and lacquer).



Paint, varnish & lacquer sales in July

Pigments are showing signs of life and a few other raw materials are in more active demand, but generally speaking, the market for raw paint materials is still in the doldrums as August closes, followed by a 3-day Labor Day holiday period. Some immediate improvement is looked for in the early part of September. Campaign to sell American house owners the idea of spending a billion or more on renovations and improvements is now in full swing and preliminary reports indicate a widespread acceptance of the borrowing plan.

Prices in many instances are still pointing upward. Fluctuation in the lead metal market brought about a slight reduction in carlot prices for red lead and litharge, but this was offset as the month closed with a similar increase. All of the principal stearates and palmitates are quoted 1c higher. Manufacturers of stearates are once more quoting carlot prices. This advance has been expected in most quarters, and the rise in palmitates was, of course, in sympathy with stearates.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Alcohol, butyl, tanks	$0.10½	$0.09½
drums	.11½	.11
l. c. l.	.12	.10½
Aluminum palmitate	.20	.19
stearate	.17	.16
Calcium palmitate	.20	.19
stearate	.18	.17
Butyl acetate, tanks	.11	.10
drums	.12	.11
l. c. l.	.12½	.11½
Magnesium palmitate	.22	.21
stearate	.19	.18
Zinc palmitate	.21	.20
stearate	.18	.17

DECLINED

Casein, 20-30 mesh	$0.11½	$0.12½
English vermillion	1.59	1.60

July Paint, Varnish and Lacquer Sales

Year and Month	Total sales reported by 586 establishments	Classified sales reported by 344 establishments: Industrial sales: Total	Industrial sales: Paint and varnish	Industrial sales: Lacquer	Trade sales of paint, varnish and lacquer	Unclassified sales reported by 242 establishments
1934						
January	$20,643,659	$6,015,030	$4,290,923	$1,724,107	$7,470,517	$7,158,112
February	17,715,447	5,639,413	3,714,128	1,925,285	6,256,162	5,819,872
March	23,193,396	7,105,176	4,768,864	2,336,312	8,504,997	7,583,223
April	27,768,932	7,589,828	5,256,548	2,333,280	10,845,963	9,333,141
May	33,678,877	8,091,723	5,824,403	2,267,320	14,079,824	11,507,330
June	28,794,352	7,629,866	5,455,366	2,174,500	11,313,931	9,850,555
July	23,484,080	7,449,074	5,254,492	2,194,582	8,461,401	7,573,605
1933						
January	$11,275,396	$3,529,886	$2,386,947	$1,142,939	$4,168,260	$3,577,250
February	11,665,734	3,423,033	2,445,378	977,655	4,771,706	3,470,995
March	13,578,568	3,391,947	2,484,550	907,397	5,788,213	4,398,408
April	19,043,787	4,677,309	3,143,803	1,533,506	8,582,411	5,784,067
May	26,241,044	5,991,938	4,298,455	1,693,483	11,788,573	8,460,533
June	27,813,233	6,827,509	4,832,551	1,994,958	12,443,998	8,541,726
July	22,090,187	6,406,184	4,493,516	1,912,668	8,627,400	7,056,603
August	20,620,811	6,323,475	4,754,701	1,568,774	7,840,359	6,456,977
September	19,097,803	5,544,686	3,975,917	1,568,769	7,462,113	6,091,004
October	18,944,106	4,949,755	3,721,420	1,228,335	7,376,012	6,618,339
November	16,234,234	4,656,353	3,466,174	1,190,179	6,566,157	5,011,724
December	16,156,062	4,418,023	3,428,376	989,647	6,157,567	5,580,472
Total (Year)	$222,760,965	$60,140,098	$43,431,788	$16,708,310	$91,572,769	$71,048,098
1932						
January	$15,894,506					
February	16,270,822					
March	19,089,005	(a)	(a)	(a)	(a)	(a)
April	22,612,193					
May	24,981,441					
June	19,637,358	$4,685,399	$3,617,719	$1,067,680	$8,734,330	$6,217,629
July	14,430,122	3,793,245	2,900,707	892,538	6,058,813	4,578,064
August	16,032,441	3,851,028	3,057,096	793,932	6,918,659	5,262,754
September	16,805,712	3,980,564	3,113,303	867,261	7,216,748	5,608,400
October	15,592,377	3,996,500	3,036,323	960,177	6,610,011	4,985,866
November	12,492,818	3,599,319	2,639,362	959,957	5,196,766	3,696,733
December	9,483,520	3,222,770	2,186,706	1,036,064	3,506,715	2,755,035
Total (Year)	$203,323,315	.....	.....	.....	.....	.....

(a) Comparable statistics not available.

Paint Consuming Industries

Production of passenger cars and trucks in the U. S. and Canada in July, estimated at 270,000 units, declined 16% under the June total but was 15% larger than the total in July last year. During the 1st 7 seven months this year 2,066,000 units were produced as compared with 1,264,273 in the 1st 7 months last year, total representing a gain of 63%.

Building and engineering contract awards showed a greater-than-seasonal decline in July. Total awards in 37 states east of the Rocky Mountains were $119,699,000 in July, as reported by the F. W. Dodge Corp. This was a decline of 5.8% under the June total and an increase of 44.8% over the total for July, '33. The seasonal decline between June and July in recent years averaged 2.9%.

Residential building awards, totaling $19,879,000 in July, were 25.2% below the June level. This decline was very much greater than the average seasonal decline of 8.2% noted in recent years. Compared with the corresponding month last year, July residential awards were 15.9% lower. This was the 3rd consecutive month for which residential awards were below last year's totals. Non-residential building awards totaled $66,753,000 in July as compared with $43,142,000 in June. This class of building was the only one to show an increase this month—an increase of 54.7%. Awards for public works fell 32.0% in July to a total of $39,066,000 from $57,409,000 in June.

Publicly financed construction awards totaled $52,507,600 in July and were 28.4% under the June total of $73,308,200. Total for July this year was 2½ times as large as that for July a year ago. Privately financed construction awards advanced in July to a level 23.0% above that of June and slightly above the level of July last year. Totals for July and June, '34, were $67,191,000 and $53,823,000, respectively.

Iron Oxide Ruling

President approves final Tariff Commission findings that importation of iron oxide pigments made in Canada by a process patented in this country substantially injured the domestic industry and directs exclusion of material produced in manner specified in 2 patents controlled by West Coast Kalsomine. Temporary order of exclusion (except under bond) was issued Mar. 2. '33. Magnetic Pigment, N. Y. City, was complainant; respondents included Canadian manufacturer. Northern Pigment, New Toronto, Can., Canadian distributor, Bruce Bros., Ltd., Toronto; and 2 N. Y. City dealers Stanley Doggett, Inc., and C. J. Osborn Co. Patents involved were Nos. 1327061 and 1368748. See CHEMICAL MARKETS, Apr. '33, p350; also June '33, p540.

Upon completion of the investigation findings were sent to parties of record in accordance with provisions of the law. Within the prescribed time there was filed in the Court of Customs and Patent Appeals, an appeal for a review of questions of law involved in Commission's findings. In May that court rendered a decision affirming Commission's findings in the investigation.

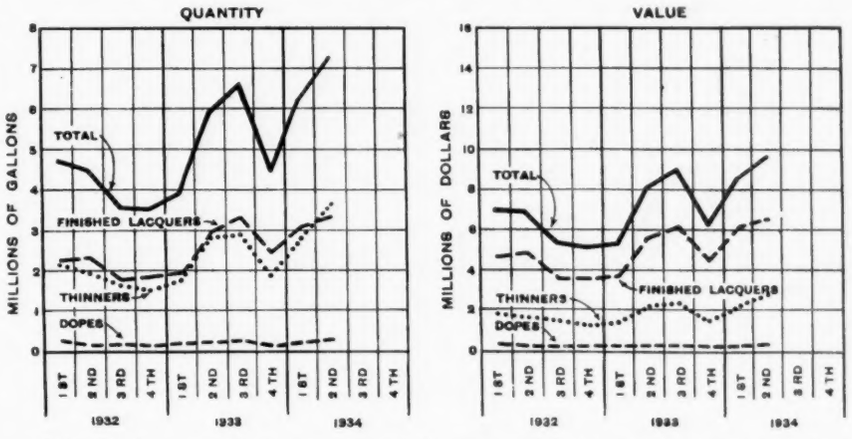
Lacquer Sales in '34

Statistics on sales and production of lacquer, reported by the U. S. Bureau of the Census, for the 1st half of '34 show a total of 13,508,028 gals. of lacquer products valued at $18,244,608, as compared with 9,841,454 gals. valued at $13,368,064 for the 1st half of '33, an increase of 37.3% in gallons and 36.5% in value for the 1st half of '34 over '33. For the corresponding period of '32, 9,141,713 gals. valued at $13,815,052 were sold, showing an increase of 47.8% in gallons and 32.1% in value in '34 over '32.

For the 1st half of '34 finished lacquer sales totaled 6,456,136 gals. valued at $12,648,212 as compared with 4,854,933 gals. valued at $9,229,996 for the 1st half of '33. Sales of lacquer thinners aggregated 6,476,311 gals. valued at $4,856,140 for the 1st half of '34 as compared with 4,473,416 gals. valued at $3,553,792 in the 1st half of '33. Sales of dopes (exclusive of base solutions used in the manufacture of lacquers) totaled 575,580 gals. valued at $720,256 for the 1st half of '34 as compared with 513,047 gals. valued at $584,276 in the 1st half of '33. See also detailed statistics and chart, this page.

N. P. V. & L. A. Pamphlets

The two new pamphlets just issued by N. P. V. & L. A., in explanation of the application of the National Housing Act to property holders, and to dealers and painters, are of special value to the industry, in that they are prepared with specific relation to the paint business and are intended to facilitate the contact of the prospects for



Sales of lacquers in 2nd quarter of '34 compared with previous quarters show appreciable gains.

LACQUERS Second Quarterly Report, 1934

(Compared with preceding quarters)

Quarterly statistics on sales of finished lacquer, lacquer thinners and dopes, based on data reported to the Bureau of the Census by 102 identical manufacturers, are presented in the following table.

SALES OF LACQUER

(Including sales of package goods to jobbers and dealers)

Year and Quarter	Total Sales		Finished Lacquer		Lacquer Thinners		Dopes *	
	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars
1934								
1st Quarter.	6,216,891	$8,562,351	3,096,347	$6,051,532	2,831,371	$2,152,620	289,173	$358,199
2nd Quarter	7,291,137	9,682,257	3,359,790	6,596,680	3,644,940	2,703,520	286,407	382,057
1933								
1st Quarter.	3,905,846	$5,323,315	1,916,350	$3,668,615	1,765,148	$1,401,624	224,348	$253,076
2nd Quarter	5,935,608	8,044,749	2,938,643	5,561,381	2,708,268	2,152,168	288,697	331,200
3rd Quarter.	6,568,896	8,890,314	3,340,182	6,176,543	2,932,826	2,340,847	295,888	372,924
4th Quarter.	4,490,940	6,229,776	2,450,501	4,424,790	1,853,974	1,577,754	186,465	227,232
Total (Year)	20,901,290	$28,488,154	10,645,676	$19,831,329	9,260,216	$7,472,393	995,398	$1,184,432
1932								
1st Quarter.	4,666,420	$6,947,508	2,249,069	$4,692,055	2,161,317	$1,913,937	256,034	$341,516
2nd Quarter	4,475,293	6,867,544	2,337,612	4,823,513	1,968,189	1,796,301	169,492	247,730
3rd Quarter.	3,578,390	5,382,948	1,778,305	3,593,977	1,601,875	1,515,330	198,210	273,641
4th Quarter.	3,532,718	5,140,226	1,836,432	3,524,739	1,499,002	1,341,175	197,284	274,312
Total (Year)	16,252,821	$24,338,226	8,201,418	$16,634,284	7,230,383	$6,566,743	821,020	$1,137,199

* Does not include base solutions used in the manufacture of lacquers.

painting, in the Better Housing Program, with the paint dealer and painting contractor.

Both of the new pamphlets make clear that time guarantees on paint products are forbidden by law under the Codes of the manufacturers and the wholesalers of paint, varnish and lacquer products. This point alone will render the pamphlets of special value in preventing misunderstandings on the part of purchasers of paint and painting, and by banks and other lending agencies, who otherwise might insist upon time guarantees on paint products, after seeing the recommendation for general wording of a contractor's guarantee in the government's pamphlet, which does not make mention of the exception of paint.

The two pamphlets issued by the Association are:

1. "How paint and varnish dealers and contracting painters can benefit by cooperating with each other and with property holders in local better housing programs under the National Housing Act—what to do and how to do it."
2. "How you as a property holder can benefit in your local better housing program under the National Housing Act with the advice and help of your paint and varnish dealer and your contracting painter—what to do and how to do it."

Pamphlets are being sold by the Association at the folowing prices: 5c per pamphlet up to 100 copies, postpaid; $3.00 per 100, 100 to 1000 copies, carriage charges collect; $25.00 per 1000, 1000 copies or more, carriage charges collect. All orders for the pamphlets should be addressed to the National Paint, Varnish & Lacquer Association, Inc., 2201 N Y. ave., N. W., Washington, D. C.

Fall Paint Campaigns

Unusually early interest in the Fall Clean Up and Paint Up Campaign is evidenced by orders received by the National Clean Up and Paint Up Campaign Bureau in Washington for window displays, window trims, window cards, banners and other campaign materials. Imminence of the government's Better Housing Program, with loans for repainting, repairs and modernizing of property to be facilitated by government insurance of loans by banks and other private lending agencies for property rehabilitation, has stimulated interest in the National Clean Up and Paint Up Campaign as a ready-to-use community vehicle for furthering the repainting, modernizing and repairing program as a practical means for giving impetus to business recovery.

A catalogue in colors, showing Clean Up, Paint Up, Fix Up, display material and prices, may be obtained from the National Clean Up and Paint Up Campaign Bureau, 2201 N. Y. ave., N. W., Washington.

Paint Personnel

E. F. Cathcart, formerly with Glidden, and before that, with du Pont, is Arco's new industrial sales manager . . . Julio F. Sorzano, former sales manager for Debevoise, is now vice-president and general sales manager for Detroit Graphite . . . Beck, Koller's technical director, Harold M. Johnson, is now vice-president in charge of eastern division sales activities. Research activities of the company is now centered at Detroit, and Linden, N. J., "labs" are closed. Mr. Johnson's headquarters are in the Industrial Bldg., 1060 Broad St., Newark, N. J. . . . Beck, Koller is adding Waldemar W. Klug, well-known in mid-west paint circles, to its staff. He will take charge of mid-west technical service. . . . C. P. Engelsman, formerly with Anaconda Lead's laboratory at East Chicago, Ind., is now with Eagle-Picher's Cincinnati staff.

With the Associations

Nominating committee of the N. P. V. & L. A. will submit its report early in September. Other committees are working at top speed on the annual convention program. Meeting is scheduled for Oct. 31-Nov. 2 at the Mayflower in Washington. . . . Secretary Elton of the Association is now back in Washington after a Canadian trip . . . Henry L. Beakes, Kentucky Color & Chemical, is temporary secretary of Louisville Paint and Varnish Production Club, pending selection of a successor to Carl A. Henlein . . . Final tabulation of Pittsburgh's Clean Up and Paint Up Campaign for '34 reveals total of 441,220 painting jobs recorded in the campaign. This is equivalent to 442,600 gals. of paint valued at $1,199,940.50. . . . Philadelphia Paint, Varnish & Lacquer Association is actively cooperating with coming Fall Better Light—Better Sight Campaign committee. President Trigg, N. P. V. & L. A., and Dr. Henry A. Gardner, director of the Scientific Section, will visit Philadelphia to speak at public meetings.

Paint Personals

Glidden president, Adrian D. Joyce, and Mrs. Joyce are returning from Europe early in September . . . N. P. V. & L. A. is playing a leading part in making the National Housing Act a success . . . Friends of John W. Coulston, president of the dry color importing firm of Reichard-Coulston, N. Y. City, did not forget 50th anniversary of Mr. Coulston in business, commemorating the event with a luncheon Aug. 14.

Replacement Costs

Market Replacement Costs, effective Aug. 20, until issuance of next schedule, are in the hands of members of the paint, varnish and lacquer industry.

Industry Deaths

Harry J. Hoffman, 34, former factory superintendent for the Arco Co., Cleveland, on Aug. 13, of a streptococcic infection . . . Eugene E. Nice, 82, outstanding Philadelphia paint manufacturer on Aug. 5 . . . Herman J. Nurre, 61, formerly assistant general manager, Hanna Paint Manufacturing, Columbus, on Aug. 22.

Cold Water Paint Sales

Monthly statistics on sales of Plastic Paints, Cold Water Paints, and Calcimines, based on data reported to the Bureau of the Census by 53 identical manufacturers, are presented in the following table.

Item	1934 June	May*
Plastic Paints:		
Total:		
Pounds	354,652	553,045
Value	$25,782	$39,825
Paste (Lead, mixed paints and emulsified types):		
Pounds	21,289	32,253
Value	$2,220	$2,762
Dry:		
Total: Pounds	333,363	520,792
Value	$23,562	$37,063
Casein bound:		
Pounds	215,417	291,524
Value	$17,219	$24,319
Glue bound:		
Pounds	117,946	229,268
Value	$6,343	$12,744
Cold Water Paints (in dry form):		
Total:		
Pounds	1,268,514	1,349,625
Value	$77,454	$93,204
Exterior:		
Total: Pounds	619,023	722,749
Value	$41,886	$52,969
Lime and/or cement bound:		
Pounds	370,116	480,531
Value	$28,128	$39,773
Casein bound:		
Pounds	248,907	242,218
Value	$13,758	$13,196
Interior:		
Total: Pounds	649,491	626,876
Value	$35,568	$40,235
Casein bound:		
Pounds	183,358	261,985
Value	$19,464	$29,079
Glue bound:		
Pounds	466,133	364,891
Value	$16,104	$11,156
Calcimines:		
Total:		
Pounds	6,318,301	7,137,724
Value	$277,547	$322,583
Hot Water:		
Pounds	3,223,268	3,712,588
Value	$139,313	$168,651
Cold Water:		
Pounds	3,095,033	3,425,136
Value	$138,234	$153,932

* Revised.

Dry Color Code Authority

Following well-known executives in the dry color field are approved by NRA as members of the code authority: A. F. Brown, Imperial Color Works, Glens Falls, N. Y.; J. Allegaert, United Color & Pigment, Newark, N. J.; Dr. Max Marx, Max Marx Color & Chemical, Irvington, N. J.; L. S. Kohnstamm, H. Kohnstamm & Co.; Baron Isaacs, Brooklyn Color Works, Brooklyn, N. Y.; O. H. Smith, J. Lee Smith & Co., Brooklyn, N. Y., and G. A. McGarkle, Krebs Pigment & Color, Newark, N. J.

Distributing warehouse system of the Pittsburgh Plate Glass reaches 71 units with the acquiring of the business and property of the Montana Glass & Paint, Butte, Mont. Operations by the Pittsburgh Plate Glass started August 1, at the same location—840 Utah ave., under the direction of R. H. Scott, local agent, and with the supervision of J. K. Wenham, local manager at Minneapolis.

"Color-Seal" is being marketed by Glidden and is reported to "do the trick"—even in most obstinate cases of "bleeding."

Naval Stores

Modest Rosin Gains

Compared with July 31 closing, prices for gum rosin show net gains at the end of August. A comparison of the Savannah market on these dates follows:

	July 31	Aug. 31	Net change
B	$4.00	$4.10	$+0.10
D	4.00	4.10	.10
E	4.00	4.25	.25
F	4.05	4.25	.20
G	4.10	4.25	.15
H	4.15	4.25	.10
I	4.15	4.25	.10
K	4.20	4.35	.15
M	4.20	4.40	.20
N	4.45	4.65	.20
WG	4.50	4.90	.40
WW	4.60	5.10	.50
X	4.70	5.10	.40

Advance in spirits turpentine is much more modest, the close on Aug. 31 of 41½c being but a ¼c advance over July 31 quotation. FF wood rosin closed the month at $4.30 against $4.35 on July 31.

Stocks of gum rosin and spirits turpentine continue to accumulate at primary points as indicated by the following:

	Rosin Savannah	Jacksonville
July 31	113,411 bbls.	67,598 bbls.
Aug. 31	127,414	72,020
Net gain or loss	+13,997	+4,422
	Spirits Turpentine	
July 31	9,690 bbls.	26,511 bbls.
Aug. 31	13,713	29,658
Net gain or loss	+4,023	+3,147

It now seems quite likely that following the rather spirited controversy between various groups in the naval stores industry and the Naval Stores Control Committee that harmony will be restored. At least several meetings are contemplated to iron out existing differences and to arrive at a plan of apportionment of sales for the next season more to the liking of all factions.

Joyce's Merger Plans

Glidden president Adrian D. Joyce, and also head of Wood Products Chemical Co., plans to merge latter company with Georgia Pine Turpentine and Liberty Pine Products. In a letter to stockholders, Mr. Joyce states, "We propose to change name of Wood Chemical to Southern Pine Chemical and make this the nucleus of the merger."

New company would be capitalized with 5,500 shares of 6% cumulative preferred stock, $100 par and 70,000 shares no par value common, and will hold all of the assets and assume all the liabilities of the 3 companies. June 30 statement shows current assets of $252,240 and current liabilities of $121,832 including $100,000 of notes payable.

July production of naval stores by steam distillation and solvent treatment of wood and stocks of these products on hand July 31, according to data collected by the producers' committee, through Arthur Langmeier, Hercules Powder Co., secretary, were:

	Rosin 500-lb. barrels	Turpentine bbls. (50 gallons)	Pine oil Gallons
July	37,037	5,547	261,410
From April 1	164,288	26,719	1,126,515
STOCKS AT PLANTS			
July 31	105,286	19,016	.....
March 31	89,963	19,253	.....
Change	+15,323	—237	.....

Note—Rosin production and stocks include all grades of wood rosin.

Deaths

George W. Cooper, president, Cooper & Brannon, Brewton, Ala., naval stores firm, on Aug. 4.

Portugal's naval stores crop is the largest on record.

Gums, Waxes, Shellac

Shellac is quiet and firm at unchanged levels. The wild speculation at the moment is absent. London stocks are still excessive and buyers here seem to have adopted a cautious and waiting attitude towards forward purchasing. No further developments in the attempt to establish a futures market in N. Y. City for shellac could be discovered, although it is still thought likely that the efforts of those favoring such a market will continue to be directed towards that end, despite numerous set-backs given the proposal.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Carnauba, No. 1 yellow	$0.34½	$0.34

DECLINED

Candelilla	$0.13¼	$0.13¾
Carnauba, No. 3 N. C.	.22	.22¼

Wax Prices Steady

The wax markets present an unchanged appearance from last month. Prices are, in most instances, steady and unaltered, and buying is being done in fair sized quantities. Carnauba importations are being taken up rapidly by consumers, and local stocks are low. Further improvement is anticipated in the general line with the close of the summer period. Cable advices from primary centers indicate generally higher replacement costs. This is specially true of beeswax.

Southern Newspaper Publishers' Association is conducting a survey to see how much newsprint they are using with an eye to supporting Dr. Herty's developments on pine paper at his Savannah laboratory.

Imports, Gums, Shellac, Camphor and Waxes

	July Quantity	July Value	June Quantity	June Value	May Quantity	May Value
Gums, Shellac—						
Damar, lbs.	1,419,474	$112,610	842,630	$50,386	113,100	$73,144
Kauri, lbs.	126,240	13,253	62,698	4,547	55,020	6,193
Lacs, crude, lbs.	408,213	59,106	854,340	122,891	579,740	66,757
Shellac, unbleached orange, lbs.	645,496	127,073	1,359,164	244,931	1,404,401	250,985
Shellac, garnet and other unbleached, lbs.	14,540	3,064	16,400	3,069	2,460	832
Shellac, bleached, lbs.	17,212	3,754	52,140	11,739	77,808	15,302
Sandarac, lbs.	1,457	547	7,225	2,420	....	....
Varnish gums, n.s.p.f., lbs.	117,325	69,068	709,191	43,300	1,223,078	64,385
Camphor, natural, crude, lbs.	239,419	60,490	132,805	32,772	66,138	17,093
Camphor, natural, refined, lbs.	122,931	52,333	21,500	10,410	164,908	69,965
Camphor, synthetic, lbs.	83,333	33,272	84,438	33,493	46,155	17,112
Arabic, lbs.	788,429	45,163	604,703	35,612	952,949	55,559
Tragacanth, lbs.	199,501	49,800	146,369	36,720	129,478	28,321
Waxes—						
Beeswax, bleached, lbs.	4,480	1,179	2,260	632	56	18
Beeswax, crude, lbs.	301,191	53,950	192,922	33,320	291,999	52,491
Carnauba, lbs.	451,610	94,677	434,367	91,622	860,757	184,022
Vegetable, n.s.p.f., lbs.	403,762	27,705	279,472	21,669	323,854	23,350
Animal, n.s.p.f., lbs.	.....	.....	192	119	33,169	3,079

Oils and Fats

Still Higher Prices

Prices in commodity markets are still pointing upward with only minor declines sprinkled through the list. Corn is extremely firm, the direct result of news on crop estimates indicating the smallest yield in years. Lard is advancing steadily in sympathy with hogs. Most of the oils and fats are making sizable gains. All of the accepted indices of commodity prices show sharp advances in the last few weeks, and most authorities look for continuance of this trend through the balance of the year.

In common with most commodity prices oils are steadily advancing. Corn, cottonseed and other vegetable oils have registered sharp price increases in the last 30 day period and the animal oils and fats are also higher.

Record trading in cottonseed oil futures is a feature of the commodity group with record total of options changing hands. It is estimated that the total for August is approximately 560,000 barrels which would place the market on a par with the record trading days of the 1st 6 months of the '27-'28 season when it averaged 582,300 barrels monthly. A comparison of closing prices on July 30 for prime bleachable (N. Y. Produce Exchange) with Aug. 31 and also Aug. 31 of last year indicates the strength in this item, the direct result, of course, of rapid advances in cotton markets in the last few months.

	Close July 30	Close Aug. 31	Last Year
Sept.	6.12	7.25–30	4.85–95
Oct.	6.17	7.28–30	4.90–5.05
Nov.	6.20–32	7.32–42	5.06–10
Dec.	6.35–36	7.41–43	5.15–20
Jan.	6.40–42	7.50	5.20–23
Feb.	6.42–52	7.50–60	5.20–33
March	6.53–53	7.61–62	5.30–40

Flax Crop Outlook

August 10th U. S. Government crop estimates indicate a flaxseed production of 5,300,000 bu., a reduction of 300,000 bu. since July 10th report, but slightly higher than the Aug. 1 figure. Condition Aug. 1 is reported as 40.3, as compared with 47.9 on July 1. Last year at this time, the flax crop was estimated at 7,797,000 bu., and in '32 at 15,800,000 bu. Most disappointing district is North Dakota, where usually the largest flax acreage is planted. Production estimate for that State Aug. 10 was 830,000 bu. as compared with a 5-year average of 7,351,000, and last year's crop of 1,677,000. Minnesota is the largest factor in the crop, as this State's production is estimated at 3,480,000 bu., as compared with the '33 figure of 4,365,000, and a 5-year average of 6,241,000.

Archer-Daniels-Midland's weekly market report for Aug. 11 asks: "How much flaxseed may crushers expect from our present domestic crop? On the basis of the present Government estimate, less than 4,000,000 bu. will be marketed—balance will be retained by farmers for seed. During the 12-month period ending Aug. 1, '34, 6,000,000 bu. of domestic flax were marketed; during the year ending Aug. 1, '33, 10,800,000; for the year ending Aug. 1, '32, 11,200,000; and for the year ending Aug. 1, '31, 18,700,000. How will we make up the difference between supply and demand? As in former years, we must look to the Argentine as our principal source of supply. However, we must compete in that market with Europe, where a deficiency in vegetable oils and fats will also exist because of drouth conditions."

Bulk of the Argentine crop has been planted and early indications point to a normal crop. Final official report from India on linseed production this season as compared with last is summarized:

	1933/34	1932/33
Acreage—	3,257,000 acres	3,299,000 acres
Total Crop—	15,080,000 bus.	16,240,000 bus.
Yield per acre—	4.6 bus.	5 bus.

Compared with July 31 close linseed prices are (on Aug. 31) unaltered, with tanks quoted at 8.9c. Flaxseed markets in August registered net gains as indicated below:

	Minneapolis		Duluth	
	July 31	Aug. 31	July 31	Aug. 31
Sept.	$1.86¾	$1.90	$1.89	$1.93¾†
Dec.	1.88½	1.91½	...	1.92½†

Figures prepared by the Flax Institute of the United States show production, consumption, stocks, imports and exports of linseed oil for the 2nd quarter as follows:

	Gallons
Stocks, March 31	21,438,835
Production, April, May, June	13,070,122
Imports, April, May, June	100,082
Total	34,609,039
Less Stocks, June 30	17,121,792
Consumption, April, May, June	17,487,247 Decrease 1.56 % under 1933
Exports	16,482

† Asked.

Flaxseed Crop August 1

	Condition Aug. 1 (%) 10-year aver., 1922-1931	1933	1934	Bushels Harvested 5-yr. aver. 1927-31	Harvested (Revised) 1933	Estimated. 1934
Wisconsin	86	76	72	92,000	40,000	48,000
Minnesota	80	51	48	6,241,000	4,365,000	3,480,000
Iowa	86	61	42	184,000	196,000	125,000
Missouri	82	64	25	15,000	11,000	5,000
North Dakota	70	33	22	7,351,000	1,677,000	830,000
South Dakota	71	18	24	3,065,000	115,000	100,000
Nebraska	80	60	30	91,000	12,000	12,000
Kansas	6.2*	6.2*	5.5*	215,000	223,000	286,000
Montana	65	37	25	1,329,000	162,000	122,000
Wyoming	74	41	30	81,000	5,000	4,000
California	..	..	20.0*	.....	.....	240,000
United States	72.7	41.1	40.3	18,664,000	6,806,000	5,252,000

* Yield per acre.

Cottonseed Products

	On hand Aug. 1	Produced Aug. 1 to July 31	Shipped out Aug. 1 to July 31	On hand July 31
Crude oil, pounds—				
1933-1934	*51,269,417	1,301,789,405	1,314,483,026	*$35,548,984
1932-1933	29,523,581	1,445,681,407	1,431,113,301	51,269,417
Refined oil, pounds—				
1933-1934	†676,331,574	‡1,195,219,377	.....	†655,584,187
1932-1933	628,420,148	1,273,898,355	.....	676,331,574
Cake and meal, tons—				
1933-1934	160,874	1,887,299	1,919,794	128,379
1932-1933	114,656	2,093,168	2,046,950	160,874
Hulls, tons—				
1933-1934	76,686	1,102,185	1,147,446	31,425
1932-1933	162,773	1,312,435	1,398,522	76,686
Linters, running bales—				
1933-1934	70,786	800,178	793,805	77,159
1932-1933	235,521	741,401	906,136	70,786
Hull fiber, 500-lb. bales—				
1933-1934	985	43,168	43,444	709
1932-1933	4,138	18,691	21,844	985
Grabbots, motes, etc., 500-lb. bales—				
1933-1934	3,216	38,547	37,724	4,039
1932-1933	15,250	31,612	43,646	3,216

* Includes 4,274,646 and 4,909,814 lbs. held by refining and manufacturing establishments and 14,320,860 and 10,658,880 lbs. in transit to refiners and consumers Aug. 1, '33, and July 31, '34, respectively.

† Includes 5,498,953 and 3,658,221 lbs. held by refiners, brokers, agents, and warehousemen at places other than refineries and manufacturing establishments and 12,642,917 and 4,811,478 lbs. in transit to manufacturers of lard substitute, olemargarine, soap, etc., Aug. 1, '33, and July 31, '34, respectively.

‡ Produced from 1,300,203,934 lbs. of crude oil.

EXPORTS FOR ELEVEN MONTHS ENDED JUNE 30

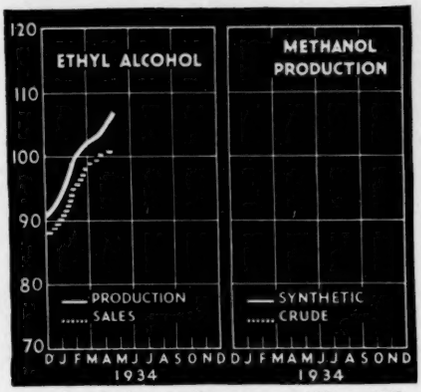
	1934	1933
Oil, crude, lbs.	14,754,958	32,756,078
Oil, refined, lbs.	6,782,539	9,123,457
Cake and meal, tons of 2,000 lbs.	72,918	149,322
Linters, running bales	155,345	166,115

ADVERTISEMENTS—*Each article on this page is a paid advertisement.*

SOLVENT NEWS

Reg. U. S. Pat. Off.

SEPTEMBER ★ A Monthly Series of Articles for Chemists and Executives of the Solvent-Consuming Industries ★ 1934



(moving twelve-month averages, 1931 = 100)

CURRENT PRODUCTION

ETHYL ALCOHOL

		1934	1933
Production			
1000 proof gals.	January-May	66,088	41,487
	May	13,478	9,149
	April	12,731	9,011
Sales			
1000 proof gals.	January-May	55,518	38,138
	May	11,685	9,044
	April	9,946	6,667

SOLVENT MARKET POSITION FIRM; WITHDRAWALS AT PRECEDING RATE

The market position of solvents and diluents continued to reflect the steady position of the major consuming industries during the past month. Prices were firmer and consumers continued to make withdrawals for near term requirements at slightly above the rate prevailing a month ago.

Production of ethyl alcohol reached a new high in preparation for the anticipated demand from the anti-freeze trade and sales of industrial alcohol are continuing well above the comparable statistics of a year ago.

Reports indicate that large consuming industries are either extending production activities or holding at the rate of a month ago with the possible exceptions of the automotive industry which is tapering off pending the introduction of new models for next year, and the textile industry which is momentarily involved in labor difficulties.

OZONE CUTS PAINT DRYING TIME

Under certain conditions, ozone is claimed to accelerate the drying time of linseed oil paints according to a recent report. Great care in its application is necessary, however, because any excess of the gas beyond a certain optimum amount is said to retard drying. In this respect it is similar to the action of metallic dryers.

In tests conducted, films normally drying in 60 hours dried in 22 hours when exposed to oxygen containing 0.4 percent ozone, while an increase in the ozone content to 0.8 percent completely stopped drying and led to clouding of the surface. Experiments with ozonized air were distinctly promising with a 0.25 percent ozone content. In one case mentioned, drying time was cut from 5½ days to 3½ days. Normal drying times of a few hours are, of course, common and the method is advanced merely to illustrate its possibilities.

TUNG OIL PAINTS SHOW MARKED RESISTANCE TO ORGANIC GROWTHS

Further investigations into the subject of micro-organic growths on painted surfaces reveal interesting results. Studying the resistance of various types of oil paints, a European investigator reports that paints containing tung oil showed a much greater resistance to the propagation of moulds than did paints containing raw or boiled linseed oil. Tung oil paints are even believed to inhibit the growth of algae.

This discovery would appear to open an extended field of application for tung oil paints since it is claimed their effectiveness against all types of lower organisms has been demonstrated thus making unnecessary the addition of toxic compounds to the paints.

In the case of linseed oil the raw and boiled oils offer much less resistance to the propagation of moulds than does stand oil. No such distinctions were observed between the behavior of differently treated tung oils. Raw oil, boiled oil and stand oil offered excellent resistance to the growth of *Penicillium glaucum*. It was also found that the resistance of linseed oil coatings increased proportionately to the amount of tung oil added.

Dibutyl phthalate is suggested as a suitable alkyl phthalate for incorporation in an insecticide and insectifuge. A recently patented compound suitable for spraying to combat flies, etc., comprises a pyrethrum flower extract and an alkyl phthalate such as dibutyl phthalate.

THE IMPORTANCE OF ANHYDROUS ALCOHOL AS A SOLVENT FOR NITROCELLULOSE, GUMS AND RESINS is graphically displayed in this section of the latest U. S. I. Educational Exhibit on Industrial Alcohol, maintained on 42nd Street, New York City. Considerable attention is attracted by the four glass tubes mounted in the circle in the center which are filled with A. S. Nitrocellulose solutions of varying viscosities and each contain a steel ball. The tubes are rotated and the balls fall with different speeds. The two test tubes on the left hand side illustrate the superior solvent power of anhydrous alcohol for certain oils while the two bottles on the right are used to explain the development of alcohol-soluble nitrocellulose. Several of the everyday products employing anhydrous alcohol in their manufacture are also shown.

PRICE REDUCTIONS INCREASE THE DEMAND FOR DIAMYL PHTHALATE

Price reductions on diamyl phthalate which served to bring the cost well in line with that of the other phthalate plasticizers have greatly stimulated the demand for this important product. Many manufacturers, while aware of the superiority of diamyl phthalate as a nitrocellulose plasticizer, were prohibited from using it freely because of the higher price when compared to dibutyl phthalate which is very nearly as satisfactory a product.

Now, however, the lowered cost combined with the improvements in U.S.I. manufacture, making available a diamyl phthalate which is water-white, have prompted buyers to investigate its characteristics with a subsequent increase in the demand.

Diamyl phthalate is generally conceded to be the ideal nitrocellulose plasticizer. It is made by the interaction of phthalic anhydride and amyl alcohol derived from fermentation fusel oil—followed by purification. Use of the purest raw materials and a highly developed rectification process enable the U.S. Industrial Chemical Co., Inc., to offer a product of extremely uniform and dependable quality. Considerable research was directed toward this end and the present product represents a very substantial improvement over the earlier quality. It is now a practically odorless and colorless liquid, which is non-toxic in ordinary commercial usages. It is a good solvent for nitrocellulose and is compatible with resins, diluents and solvents now in general use for the

(Continued on next page)

WOOD PRIMING SCHEMES FOR NITROCELLULOSE LACQUERS

Producing durable wood lacquer schemes is one of the most difficult problems confronting the cellulose lacquer manufacturer, due probably to the greater volume changes in the wood compared with the elasticity of nitrocellulose lacquers.

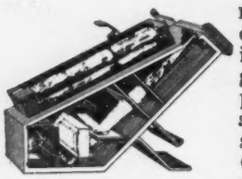
A series of tests run with a cellulose spraying enamel and reported in a foreign technical journal reveals the importance of careful selection of the priming ingredients. Most favorable results were obtained from the use of red lead-oil primer followed by a semi-oil, (e.g. equal parts oil and nitrocellulose) and oil free primers respectively. Direct application of the cellulose finish to the bare surface was unsatisfactory and conspicuously poor results were obtained when the cellulose top coat was applied to wood primed with either resin-free nitrocellulose or rubber solutions.

Greater durability reported for panels receiving an intermediate coat of nitrocellulose filler rather than one of an oil-basis was attributed to the more powerful solvents in the former which bit into the priming coat and gave better anchorage.

Published Monthly by the U. S. Industrial Chemical Co., Inc.

GLOSS AND SURFACE TEXTURE MEASURED BY NEW INSTRUMENT

A new instrument, known as the "Glossmeter" has been developed for the measurement of the gloss and surface textures of various materials such as paints, lacquers, textiles, ceramics, metal finishes, etc.



The instrument is used to obtain a numerical rating for gloss and also to provide a description of the surface texture. Consisting of a small, portable, self-contained photometer, it measures the specular reflection of surfaces to which it is applied.

The gloss value obtained is independent of the diffuse or body reflection of the surface and for this reason a numerical gloss figure does not depend on the brightness or color of the sample but only on its mirror-like reflection.

DIAMYL PHTHALATE

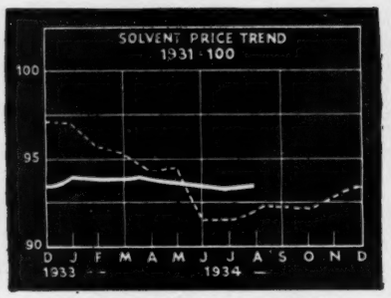
(*Continued from preceding page*)

production of lacquers and plastics.

Substantial quantities of diamyl phthalate can be added to lacquer without producing tackiness in the resulting film. Because of its very low vapor pressure, it will remain permanently in the film and thus produce a coating which retains its plasticity over a long period of time. Diamyl phthalate also has the advantage of unusually good stability to light and heat.

Aside from use in the manufacture of nitrocellulose lacquers, diamyl phthalate is also employed as a foam prevention medium in the manufacture of glue, as a plasticizer for resins, and in rubber cements. Because of its neutral and stable character with a very low vapor pressure other possible uses have been suggested such as a medium for heat transfer or to replace mercury in vapor lamps.

An aluminum paint which is said not to stiffen canvas or other fabrics is now available. It was developed for use in painting awnings, tents, etc.



SOLVENT PRICE TREND

Price increases on solvents and diluents posted during the past month caused a slight advance in the Solvent Price Trend Index, the first since last April. The index number for August 15th is 92.81 compared with the July 15th figure of 92.53.

Normal Butyl Alcohol, Secondary Butyl Alcohol, Normal Butyl Acetate, Secondary Butyl Acetate, Secondary Amyl Alcohol, Secondary Amyl Acetate and Amyl Acetate Technical were among the solvents on which the price was increased.

LEAD SUB-OXIDE AS RUST INHIBITOR GAINS ATTENTION

Lead sub-oxide is attracting more attention as a rust inhibitive agent since the difficulties in its economic production have been overcome according to a report from abroad.

To date, red lead is the only lead pigment in general use as a rust inhibitor. It has, however, several objectionable features which the sub-oxide overcomes. The color of the sub-oxide, Pb_2O, ranges from gray to chestnut brown depending on the raw material and the production temperature. The report also states that the sub-oxide forms the same proportions of lead soap as red lead and in addition a very finely divided elementary lead.

Examination of surfaces under an aged coating of this material is reported to show penetration of the metallic lead into the iron, which augments the protective effect.

TECHNICAL DEVELOPMENTS

A new concrete surface coating material which needs no undercoat is said to be absolutely waterproof. It will dry to touch in one hour under favorable conditions so that additional coats may be successively applied without undue loss of time.

U S I

A new asphalt base aluminum paint having exceptionally high insulating value is now on the market. It is reported that its use on kettles will reduce heat loss through radiation, and on other surfaces it will minimize heat penetration or loss.

U S I

50% butyl acetate and 50% toluol is reported to be a most practical grinding medium for aluminum stearate. Grinding time depends on the solvent used, the initial and final size of the stearate particles. The flat effect depends on the concentration of stearate in the film, the size of the particle and the solvent used.

U S I

The conversion of turpentine into a drying oil is the claim of a new German process. In combination with rosin ester, this oil is said to produce a varnish that will dry dust free in 18 hours. The process consists of heating the turpentine with a small amount of sulphuric acid and subsequent ozonizing.

U S I

A new type kalsomine, claimed to be alkaline and hence compatible with free lime and moisture in plaster and masonry surfaces has been announced. As a coating, it is said not to seal the surface but to allow it to "breathe" thereby harmonizing itself with surface expansion and contraction and so prevent formation of cracks in plaster. It may be applied to "fresh" plaster or "green" masonry after 48 hours.

U S I

A paint fluid hose, now on the market is said to resist successfully all the usual solvents and to last four to twenty times longer than rubber compounded hose. It is made of a newly developed compound said to have the strength and flexibility of rubber and the added advantage of freedom from the tendency to soften, slough off, break or disintegrate when in contact with oils or solvents.

U S I

A viscosity regulator which is designed to correct the tendency of varnish to become heavier as it circulates due to the natural evaporation of volatile solvents, is now available. A slowly revolving agitator is suspended in the liquid under control. Any change in the viscosity is reflected in the resistance to rotation and is transmitted to a valve which admits a sufficient quantity of thinning solvent to maintain the correct mixture.

U S I

A new paint fluid regulator for use with circulating paint spraying systems is said to assure constant fluid pressure at all units. Thus a spray-gun farthest from the power source is fed fluid at the same pressure as the one nearest the source. Of stainless steel construction, the regulator may be had with a 50 pound pressure gage.

U.S. INDUSTRIAL ALCOHOL CO.
INDUSTRIAL CHEMICAL CO., INC.

WORLD'S LARGEST PRODUCERS OF ALCOHOL DERIVED SOLVENTS

ALCOHOLS
Amyl Alcohols
Refined Amyl Alcohol
Refined Fusel Oil
Secondary Amyl Alcohol
Ethyl Alcohols
Specially Denatured—All Formulas
Completely Denatured—All Formulas
Anhydrous—Denatured
Absolute—Pure
C.P. 96%—Pure and Denatured
Solox—The General Solvent
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ALCOHOLS
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Normal and Secondary
Methyl Alcohol

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ETHERS
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World Outlook

World supply of flaxseed during the current season is expected to be considerably less than last year which was below the supply of previous years, according to a review of world flaxseed prospects by the Bureau of Agricultural Economics. A small crop of flaxseed this year in the U. S. and Canada is accompanied by smaller production in India where the crop this year will be the smallest since 1931, it is expected.

Manchurian Soybean Corp.

The 1934 Manchurian soybean crop is now estimated at between 4,000,000 and 4,500,000 short tons as compared with the '33 crop of 5,071,000 short tons, according to U. S. Agricultural Commissioner O. L. Dawson at Shanghai. A larger crop was expected but excessive rainfall in South Manchuria in June and in North Manchuria in July necessitated a downward revision in the estimate.

Because of the reduction in the crop and the increased interest shown by buyers, prices at Dairen rose rapidly during July. Dairen Exchange quoted beans at 4.52 silver yen per picul ($20.50 per short ton) and bean cake at 1.28 silver yen per picul ($5.80 per short ton) during the 1st half of August. Dairen trade expects that the demand for the new crop will be maintained at a good level. European demand for soybeans has been active all Summer and exports for the 1933-34 season are expected to be near 4,000,000 short tons. Exports of soybeans during the '32-33 season amounted to approximately 3,000,000 short tons. The commercial carryover is now expected to be near 250,000 short tons, which is about normal.

Flax Crushing Quotas

AAA will grant flaxseed crushing quotas to Pacific Coast oil-crushing firms not now having quotas under the code for the linseed oil manufacturing industry, provided they purchase sufficient amounts of flaxseed grown in California and Arizona.

Tung Oil Imports

June Hankow tung oil exports to the U. S. totaled 11,464,000 lbs., surpassing the high quantity of 7,648,000 shipped in the preceding month, but less than the 17,630,000 exported in June, 1933.

Total exports of tung oil from Hankow in June totaled 13,542,000 lbs., as compared with 9,268,000 for the preceding month and 20,986,000 for June, 1933. Shipments of oil to Shanghai for June showed a further advance to 1,624,000 lbs., all of which was reputedly destined for the U. S. Hankow stocks of oil on hand the end of June increased to 2,900 short tons from 1,600 short tons the preceeding month and 1,710 short tons for June, 1933. Total exports to the U. S., during the months January to June, inclusive, totaled 39,482,000 lbs., this year, as compared with 43,930,000 lbs. in the similar period last year.

Southern Cotton Oil is reopening its Gastonia, N. C., branch.

More Fishing

An increased number of boats will engage in menhaden fishing this season (season runs from June to Dec. 1.).

Chemical Specialties

Month's Outstanding Specialty

In a material known as Amolistic, being marketed by the floor treatment division of American Oil & Disinfectant Co., 129 E. 26 st., N. Y. C., a way has been found to break the asphalt up into billions of particles instead of millions as heretofore, with a resultant finer emulsion that makes it possible to mix larger quantities of cement, sand and gravel or trap rock, that, when applied, gives a wearing surface hard enough to stand heavy loads on steel wheels.

Amount of aggregate mixed with Amolistic determines the hardness to which it will set up. For foot traffic, the floor may be made as soft as rubber. By merely increasing the quantity of cement, sand and gravel or trap rock, a hard durable, wearing surface is produced for repairing and resurfacing trucking aisles, loading aprons in front of machines, platforms, boiler room floors, or wherever a smooth, skidproof and durable surface is desired. Amolistic will bond to all types of floors—concrete, wood, asphalt, composition or brick.

Soap "Suds"

P. & G. workers' dividends total $252,613 for 1st 6 months of '34 against $144,945 for the same period a year ago. . . W. J. McCarron is now eastern representative for Davies-Young Soap, Dayton. . . Riebe Soap & Chemical Wks., Seattle, is now Riebe-Continental Chemical Co. . . Pan American Soap, Tampa, Fla., is incorporated. . . Over 400 workers at Lever Bros.' Hammond, Ind., plant demand 5 and 10% pay increases in a strike move.

Courtesy, Modern Packaging

Brooks & Porter are the designers of this month's most notable display aid. Product by Clark & Dunn Mfg., St. Louis, was described in a recent issue of CHEMICAL INDUSTRIES.

New Specialty Houses

How-Glad Mfg. Co., 79 E. 130 st., N. Y. City, is formed by Creco Co's former production manager, Joseph H. Zwick, to manufacture sanitary specialties. . . Albert A. Nudelman is incorporating Grand Soap & Chemical at 175 Varick st., Brooklyn.

Insecticide Code Officers

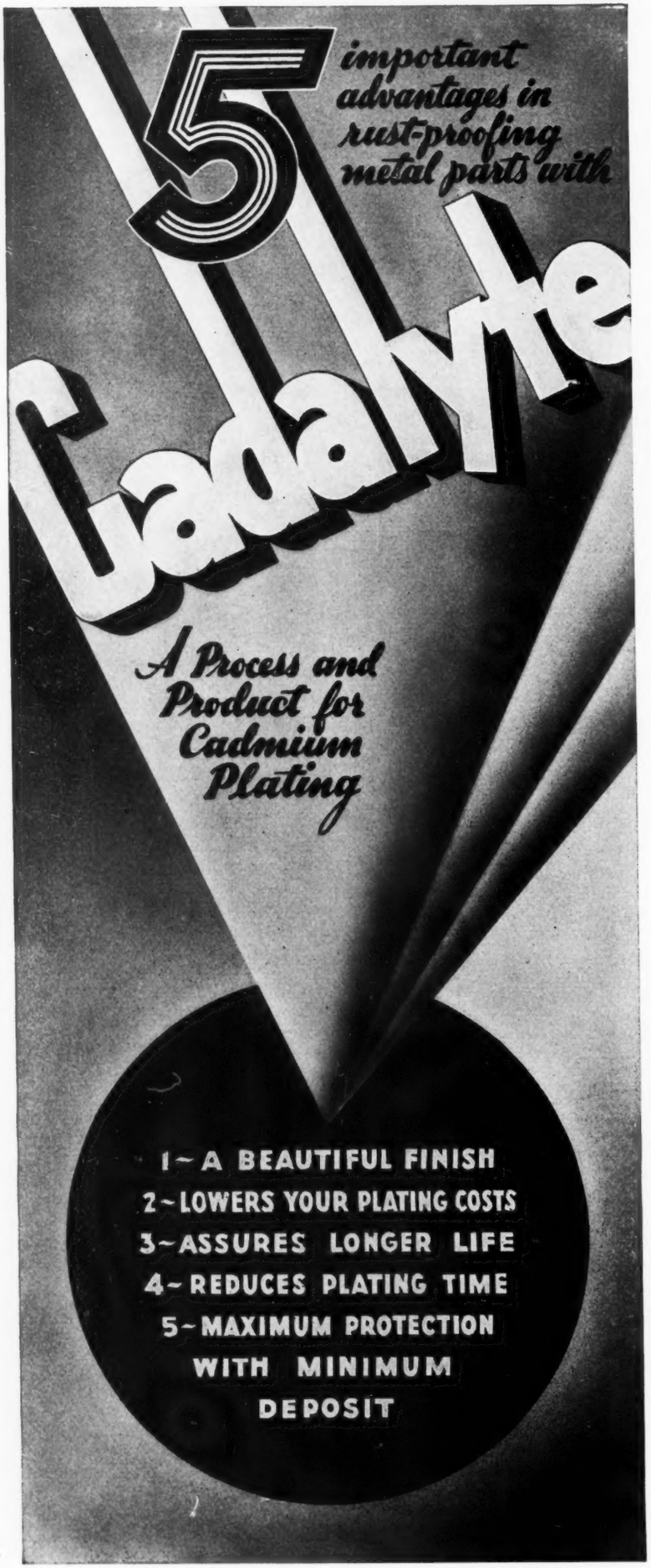
Permanent officers of the insecticide and disinfectant manufacturing industry code authority are: Dr. Robert C. White, president, William B. Eddy, Rochester Germicide, secretary, and W. G. Griesemer, Black Flag, Baltimore, treasurer.

High Lights in the News

The Reardon Color & Chemical Wks., Carew Tower, Cincinnati, is supplying carnauba to chemical specialty manufacturers. . . American insecticides are making rapid progress in Egypt, Cairo Commercial Attache C. E. Dickerson, Jr., reports to the Commerce Dept. . . Clorox Chemical (bottled bleach) declares regular 50c quarterly dividend. T. E. Fullmer, a director, is now assistant secretary-treasurer. . . *Modern Packaging* is now receiving packages for it's 1934 All-America Package Competition. . . Parolux Manufacturing (disinfectants) is moving plant from Detroit to Knoxville, Tenn. . . International Salt's new 2-toned blue package is a "honey."

New Products

"Spotz" is a new cleaning fluid made by Globe Laboratories, Fort Worth, Texas. . . "Ant-B-Gon is a new ant exterminator made by L. & N. Co., Los Angeles. . . "Bronze Ball" is the name of a new detergent marketed by Metal Sponge Sales, Philadelphia.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A Process and Product for Cadmium Plating
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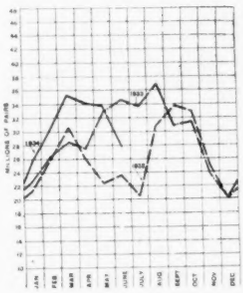
Acids and General Chemicals Division—Montreal and Toronto

Textile and Tanning Chemicals

Strikes

Textile chemicals are in very poor demand. Purchasing in the last 3 weeks has been limited strictly to small quantities for immediate delivery as the threat of a nation-wide strike in the textile field, coupled with a huge inventory of finished goods, forced processors to hold manufacturing operations down to a minimum. No reason existed for speeding up operations with more than a month's supply of goods waiting disposal. Dyes are quiet for the same reasons as the processing chemicals.

Tanning chemicals are moving out slowly. Hesitancy on the part of the tanning and shoe trades as to the Government's policy on surplus hides is the principal reason for the present state of inactivity in the manufacturing centers.



Shoe Production

The New England Shoe and Leather Association is reported receiving semi-official assurances that the Government will not operate shoe factories or tanneries in connection with processing hides from drought cattle slaughter. Government plan now appears to be that of having the work done in existing plants under private management, on a contract basis.

Dextrin and starch are sharply higher as a result of higher corn prices. Generally speaking, imported tanstuffs are higher, with the valonia cups quotation higher and stocks scarce. Egg yolk is higher on the strength of higher quotations in the primary markets.

It is entirely out of the question, at this writing, to even hazard a guess as to when a return to normal conditions in the textile field may be anticipated. With approximately 800,000 supposedly ready to answer the union's call to arms and with the Government's mediation efforts to date amounting to nil, and with manufacturers loaded with stocks, the situation is not one lending itself to immediate arbitration and solution.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Dextrin, corn	$4.05	$3.70
British Gum	4.30	3.95
White	4.00	3.45
Gambier, common	.05¾	.04½
cubes	.06	.05½
Egg yolk	.44	.42½
Starch, pearl	3.46	3.11
powdered	3.56	3.21
Valonia cups	26.00	25.75
Wattle bark	29.50	29.00

DECLINED

Myrobalans, J1	$25.00	$26.00
J2	16.00	16.25
Zinc dust	.06¼	.0630

Wolf's New Product

Jacques Wolf & Co. places on the market a one-bath water repellent, Waterproof W 559. Product, result of a long research carried on by its development department, gives dyer and finisher of yarns, hosiery and piece goods a simple process for 1. spotproofing; 2. rainproofing; 3. splashproofing; 4. showerproofing.

Wolf's Waterproof W 559 makes a milky emulsion which gives exceptional results on all fibres—cotton, wool, silk or rayon. By a slight adjustment of concentration all fabrics can be made water shedding or completely water repellent. The sales-service department is in a position to offer advice on specific waterproofing problems, and free working samples with exact directions are available.

Laurel Soap Manufacturing, Philadelphia, is celebrating a quarter of century in business. In September, '09, William H. Bertolet began in a one room factory the manufacture of pure olive oil soap. Incorporated in '18 business is still operated under his personal supervision.

Silk industry's answer to the ever-increasing inroads into its markets by synthetic materials is "The Silk Parade"—a special event beginning Sept. 10 and continuing for 2 weeks. By every art known to "admen" America is to be made "silk conscious."

Following figures, furnished by Fairchild Publications to *Printers' Ink*, demonstrate extent of silk's dilemma. They represent the consumption, in pounds, of raw silk and rayon in the U. S. for the last 5 years.

	Raw Silk	Rayon
1929	82,426,000 lbs.	131,329,000 lbs.
1930	77,436,000 "	117,196,000 "
1931	79,120,000 "	157,359,000 "
1932	73,658,000 "	152,178,000 "
1933	62,434,000 "	206,773,000 "

Activity In Textiles

	July 1934	July 1933	June 1934	June 1933	May 1934	May 1933
Indices of textile fibre consumption:						
Textile group a	77	130	77	133	89	108
Cotton consumption a	79	135	74	139	95	113
Wool consumption a	55	141	61	134	63	105
Silk deliveries a	100	143	109	172	112	136
Rayon deliveries b	332	470	299	450	273	517
Cotton:						
Consumption, bales	359,372	600,641	363,414	679,261	519,765	.....
Spinning spindles operating	24,417,682	26,085,300	24,690,312	25,549,974	25,891,366	24,571,498
Stocks, consumers, end of month, bales	1,230,369	1,348,236	1,326,480	1,398,448	1,421,428	.....
Stocks, warehouses, end of months, bales	5,565,140	5,736,398	5,985,715	6,309,492	6,570,664	.....
Wool consumption (grease equivalent) lbs.	.....	.....	26,213,190	.....	28,212,944	.....
Silk:						
Imports, bales	.....	.....	31,057	47,435	38,717	44,238
Deliveries to mills, bales	32,021	.....	33,069	53,627	38,940	47,151
In storage, end of month, bales	.....	.....	59,048	33,933	61,060	40,151
In transit, end of month, bales	.....	.....	38,600	41,500	33,200	42,300
Rayon employment c	296.8	281.4	273.8	260.1	267.7	246.9
Rayon payrolls *...c	208.6	177.3	200.0	191.2	191.2	149.1

a Federal Reserve Board Indices, adjusted for seasonal variation; b Textile Organon Index, actual deliveries; c Dept. of Labor, 1923-25—100.

Production, Shipments, Stocks of the Metals

	July 1934†	July 1933†	June 1934†	June 1933†	May 1934†	May 1933†
Copper production, U. S.	30,300	.....	32,500	.....	33,000	.....
Foreign	76,500	.....	75,500	.....	77,500	.....
World total	106,800	.....	108,000	.....	110,500	.....
Copper deliveries, U. S.	30,000	.....	46,500	.....	47,500	.....
Foreign	77,000	.....	81,000	.....	83,000	.....
World total	107,000	.....	127,500	.....	130,500	.....
Copper world stocks	496,500	.....	502,000	.....	538,000	.....
Copper, American stocks	.....	.....	.....	.....	.....	.....
Lead production, U. S.	27,354	.....	29,695	.....	34,741	.....
World total	123,196	103,483	122,172	107,309	132,252	.....
Lead, stocks as month closed	.....	.....	311,039	280,331	305,020	.....
Lead, domestic shipments	.....	.....	.....	.....	.....	.....
Zinc production, U. S.	24,943	30,865	25,143	.....	30,992	21,516
World total	.....	.....	98,857	85,575	108,179	.....
U. S. shipments slab zinc	26,950	45,599	30,186	36,647	35,635	27,329
U. S. zinc, unfilled orders	16,058	35,788	21,726	27,142	20,831	21,056
Zinc stocks, U. S.	97,682	108,157	99,689	122,891	104,732	135,556
Zinc stocks, cartel	.....	.....	122,378	.....	126,855	.....
U. S. retorts oper. end of period	30,324	25,836	31,284	24,404	27,193	23,569
Silver production, U. S.*	1,825	1,552	2,312	1,209	2,303	.....
World total*	.....	.....	15,193	11,575	16,131	.....
Tin shipm'ts from cartel countries‡	.....	.....	7,474	.....	7,551	.....

* In ounces; ‡Long tons; † In tons.

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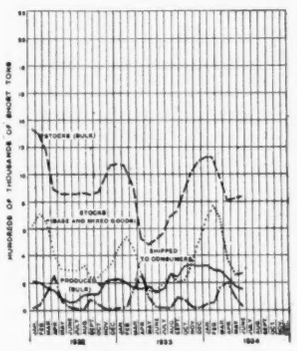
Standard Quality

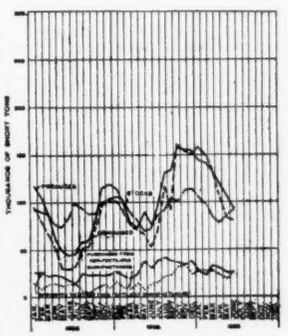
Fertilizers

Nitrate Lower

Nitrate prices are finally available and are based on $23.50 in bulk, a $1 reduction over last season's figures. Bag material is off $1.50. Sulfate is now quoted at $24. For a short period domestic material was offered at $22 to close out stocks. Nitrogenous material, blood and tankage, moved into higher price levels; in fact, the rise in these 3 products almost overshadowed the announcement of nitrate and sulfate prices. With the rapid decline in steel operations, plus a sizable sulfate export movement in August, the situation in this commodity is now one of distinct firmness, and in some quarters a $1 rise is talked of. After the feverish activity of July and early August the potash market is now relatively quiet with prices fairly firm. In some quarters, however, it is reported that the maximum 12% discount can be obtained, although the announced schedule now calls for 6%. Higher anhydrous ammonia and urea-ammonia liquor prices are mentioned. Fish scrap prices are higher. Superphosphate is exceptionally firm and another 50c advance in January is looked for in the trade.



Production, shipments, stocks of superphosphate.



Production, stocks, etc., sulfuric acid reported by fertilizer producers.

Imports of fertilizer and fertilizer materials for July were about 15% smaller than imports for July, '33, while exports were about 3% larger than the outgoing shipments for July, '33, according to reports summarized by N. F. A. from preliminary reports of the Dept. of Commerce. Outstanding gains in imports were shown in ammonium sulfate, sodium nitrate, and "other fertilizers." Exports of high grade hard rock were larger than for last July while the exports of land pebble rock were slightly smaller. Imports of fertilizer and fertilizer materials for year ended July 31, '34, were 41% larger than the imports for the preceding fiscal year and 37% larger than the imports 2 seasons ago. Receipts of the following materials were larger during the latest fiscal year: calcium cyanamid, calcium nitrate, dried blood, sodium nitrate, urea and calurea, ammonium phosphates, "other nitrogenous materials," superphosphates, phosphate rock, and all potash materials. Outstanding gains were shown in sodium nitrate, 20% kainite, sulfate of potash magnesia, and nitrate of potash. Imports of sodium nitrate totaled 343,057 tons compared with 52,218 tons last season, 209,879 tons 2 seasons ago, and 510,597 tons 3 seasons ago. Receipts of sulfate of ammonia totaled 279,420 tons compared with 360,022 tons last season, 261,770 tons 2 seasons ago, and 66,715 tons 3 seasons ago.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Blood, dried, N. Y.	$3.00	$2.45
Chicago	2.50	2.35
South American	3.00	2.85
Fish scrap, dried	2.60	2.25
Nitrogenous material	2.50	2.35
Tankage, ground	3.00	2.65
unground	2.60	2.00

DECLINED

Sodium nitrate, bulk	$23.50	$24.50
200 lb. bags	24.80	26.30
100 lb. bags	25.50	27.00

Exports of fertilizer and fertilizer materials during the fiscal year ended July 31, '34, were 48% larger than those for the preceding year and were 20% larger than the exports of 2 seasons ago. During the last year larger shipments were made of ammonium sulfate, nitrogenous organic waste materials, high grade hard rock, land pebble rock, superphosphates, potash fertilizers, concentrated chemical fertilizers, and prepared fertilizer mixtures. Exports of nitrogenous chemicals (chiefly domestic synthetic sodium nitrate) totaled 123,688 tons compared with 137,409 tons for the preceding year and 105,706 tons 2 seasons ago. It is interesting to note that while the imports and exports during the latest fiscal year were larger than the activities for the 2 preceding seasons the volume of the imports and the exports did not quite reach the total for the year ended July 31, '31.

Solid Urea

Du Pont's ammonia dept., Wilmington, Delaware, announce that a plant for the manufacture of solid urea is under construction at Belle, near Charleston, W. Va. Shipments will begin about Jan. 1, '35. This plant will be the 1st of its kind in this country and will have a capacity sufficient to fill the entire domestic demand for urea. The product, to be called Du Pont Crystal Urea, will be offered in grades suitable for the various technical uses.

Since September '32, du Pont have manufactured urea-ammonia liquor, a liquid product containing urea and which has attained wide acceptance as an ingredient of mixed fertilizers based on superphosphate. Du Pont Crystal Urea is a logical extension of urea-ammonia liquor manufacture. At present, domestic industry is dependent solely upon Germany for urea supply. Price schedules and other particulars will be announced in the near future, well in advance of initial production.

Phosphatic Clay

Dr. F. A. Northen now owns Florida Fertilizer & Milling and is installing machinery for the production of phosphatic clay.

N. F. A. News

Jerome Henry joins N. F. A. staff as assistant in educational and publicity work. He was until recently connected with N. B. C. . . . N. F. A. is conducting 1st national grade survey since 1926. Cooperation of all manufacturers will enable the Association to give out the results quickly.

Fertilizer Notes

Dolomite or dolomitic limestone is to

June Superphosphate Report

(Expressed throughout in equivalent tons of 16% A. P. A.)

	United States		Northern Area		Southern Area	
	1934	1933	1934	1933	1934	1933
Bulk superphosphate & superphosphate in base & mixed goods combined:						
Stocks on hand June 1	920,432	497,703	357,721	257,139	562,711	240,564
Production during June	107,624	88,886	71,647	61,856	35,977	27,030
Book Adjustments—account inventories	+2,108	+4,691	+2,653	—753	—545	+5,444
Other Receipts—Intercompany transfers, etc.	9,052	21,166	4,434	11,390	4,618	9,776
Total Receipts	1,039,216	612,446	436,455	329,632	602,761	282,814
Shipments during June	—98,145	—93,768	—60,875	—50,945	—37,270	—42,823
Stocks on hand June 30	941,071	518,678	375,580	278,687	565,491	239,991

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ALUMINUM STEARATE
TECHNICAL H S

Highest bodying and suspending power per pound. Gives uniform results.

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TECHNICAL H T

For Paint and Varnish Manufacture and Waterproofing

Always constant in composition. Easier to use as it dissolves at lower temperatures. Gives maximum flatting effect with minimum bodying tendency.

Blends of the above grades are often used for specific purposes

ZINC STEARATE U. S. P.
For Cosmetics, Paints, Varnishes, Lacquers and Rubber Manufacture

Particularly fine texture for quality face and toilet powders. A bulky product of high purity.

An excellent flatting agent used in the making of better paints, varnishes and lacquers.

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AMERICAN POTASH & CHEMICAL CORP.

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Acetate of Soda
Acetone C. P.
Methanol
(all grades)
Methyl Acetone
Denatured Alcohol
Formaldehyde
Borax
Phenol U. S. P.
Benzol
Toluol
Xylol
Whiting
Magnesium Carbonate
Magnesium Oxide

be substituted for sand at present used in Alabama fertilizers as filler . . . Tampa's 6-month phosphate rock exports, 340,685 tons, high for last 4 years . . . Recent prospecting, British *Chemical Trade Journal* reports, show considerable areas both to the East and West of the Dead Sea contain phosphate rock.

July Fertilizer Tag Sales

	% of 1933	July 1934 Equiv. Tons*	July 1933 Equiv. Tons*	July 1932 Equiv. Tons*	% of 1932-33	August through July 1933-34 Equiv. Tons*	August through July 1932-33 Equiv. Tons*	August through July 1931-32 Equiv. Tons*
South—								
Virginia†	35	1,502	4,260	1,956	109	324,010	298,565	277,527
North Carolina	68	1,211	1,781	1,116	99	872,072	882,146	674,535
South Carolina	636	7,956	1,251	1,820	107	590,636	549,746	445,825
Georgia	119	1,320	1,113	50	144	562,651	389,605	356,733
Florida†	188	12,525	6,666	8,565	111	399,644	360,064	371,011
Alabama	35	300	850	100	135	368,800	274,000	204,900
Mississippi	170	678	400	91	209	179,601	85,856	85,666
Tennessee†	81	162	200	522	121	89,269	73,565	64,477
Arkansas‡	...	0	350	0	195	41,775	21,435	18,348
Louisiana†	22	250	1,150	0	148	80,345	54,295	52,251
Texas†	30	60	200	25	172	54,661	31,822	36,683
Oklahoma	0	0	0	0	239	4,735	1,985	3,225
Total South	142	25,964	18,221	14,245	118	3,568,199	3,023,084	2,591,181
Midwest—								
Indiana	797	1,840	231	406	174	131,881	75,800	94,712
Illinois	...	169	0	0	128	§ 19,522	§ 15,275	§ 18,827
Kentucky	36	384	1,060	797	118	61,818	52,315	59,980
Missouri	...	20	0	25	210	41,241	19,667	37,212
Kansas	2	5	250	0	122	2,025	1,663	2,885
Total Midwest	157	2,418	1,541	1,228	156	256,487	164,720	213,616
Grand Total	144	28,382	19,762	15,473	120	3,824,686	3,187,804	2,804,797

* Monthly records of fertilizer tax tags are kept by State Control Officials and are slightly larger or smaller than the actual sales of fertilizers. The figures indicate the equivalent number of short tons of fertilizer represented by the tax tags purchased and required by law to be attached to each bag of fertilizer sold in the various States.

† Cottonseed meal sold as fertilizer included.

‡ Excludes 43,570 tons of cottonseed meal for August-July combined, but no separation is available for the amount of meal used as fertilizer from that used as feed.

§ Revised.

U. S. Imports and Exports of Fertilizer and Fertilizer Materials by Classes—Total for All Countries—Long Tons

(Summarized by The Nat'l. Fertilizer Assn. from Dept. of Commerce Preliminary Reports)

IMPORTS**

	July 1934**	July 1933	July 1932	August-July 1933-34	August-July 1932-33	August-July 1931-32
Ammonium sulfate	20,756	10,666	19,797	279,420	360,022	261,770
Amminium-sulfate-nitrate	0	0	0	1	0	2,587
Calcium cyanamide	3,338	1,462	4,029	79,505	64,467	52,150
Calcium nitrate	1,082	195	0	31,798	15,811	6,407
Guano	1,318	5,538	0	29,233	57,931	3,646
Dried blood	115	747	41	6,272	3,139	5,628
Sodium nitrate	10,976	5,308	100	343,057	52,218	209,879
Urea and calurea	134	181	49	5,842	5,474	5,971
Ammonium phosphates	307	156	*	8,842	1,059	*
Tankage	382	3,950	1,528	15,994	22,956	22,315
Castor pumace	222	*	*	5,570	*	*
Other nitrogenous	4,946	10,287	1,118	89,136	35,935	34,625
TOTAL NITROGENOUS MATERIALS	43,576	38,490	26,662	894,310	619,012	604,978
Bone phosphates	975	1,867	1,674	22,555	28,037	35,047
Superphosphates	520	1,082	1,839	22,153	20,513	12,234
Phosphate rock	0	0	0	5,625	2,100	6,350
All other phosphates	0	0	1	277	7,630	15,898
TOTAL PHOSPHATE MATERIALS...	1,495	2,949	3,514	50,610	58,280	69,529
Muriate of potash	4,268	10,543	7,211	121,204	84,286	127,431
Kainite, 14%	448	2,373	3,558	39,250	33,312	47,545
Kainite, 20%	3,824	0	‡	99,073	12,299	‡
Manure salts, 30%	7,175	14,091	4,878	111,505	99,281	128,684
Sulfate of potash	2,491	6,343	2,517	42,223	36,345	40,299
Sulfate of pot. magnesia	0	1,953	*	23,431	5,668	*
Nitrate of potash	1,014	2,740	*	28,494	12,341	*
Other potash	45	10	8	348	413	756
TOTAL POTASH MATERIALS.....	19,265	38,053	18,172	465,528	283,945	344,715
Nit-phos-pot. fertilizer	0	18	0	1,440	6,949	2,907
Other fertilizer	4,949	1,697	1,651	51,361	70,346	47,527
GRAND TOTAL	69,285	81,207	49,999	1,463,249	1,038,532	1,069,656

EXPORTS

Ammonium sulfate	893	2,309	263	18,885	4,801	24,359
Other nitrogenous chemicals†	2,908	3,825	7,079	123,688	137,409	105,706
Nitrogenous organic waste	776	445	291	15,820	8,899	3,897
TOTAL NITROGENOUS MATERIALS	4,577	6,579	7,633	158,393	151,109	133,962
High grade hard rock	12,575	5,029	812	85,128	41,288	126,063
Land pebble rock	57,097	60,024	46,217	869,048	577,883	680,129
TOTAL PHOSPHATE ROCK	69,672	65,053	47,029	954,176	619,171	806,192
Superphosphates	5,700	5,625	4,554	47,810	19,770	44,677
Other phosphate materials	228	111	141	8,307	729	1,853
TOTAL PHOSPHATE MATERIALS...	75,600	70,789	51,724	1,010,293	639,670	852,722
Potash fertilizers	1,486	3,488	107	28,114	15,641	9,082
Concentrated chem. fertilizers	1,446	34	589	19,269	13,881	20,248
Prepared fertilizer mixtures	273	250	306	3,323	1,461	2,739
GRAND TOTAL	83,382	81,140	60,359	1,219,392	821,762	1,018,753

* Not previously stated separately. ‡ Included in kainite, 14%. † Chiefly domestic synthetic sodium nitrate. ** The Import figures for 1934 represent the imports entered for consumption plus withdrawals from warehouses for consumption.

Personnel Changes

J. C. Carroll is now Barrett's Atlanta manager. He was formerly V.-C. . . . George W. Gage, formerly with A. A. C. at Chester, S. C., is now with Anderson Fertilizer at Anderson, S. C.

Fertilizer Deaths

Eugene R. McCarty, International Agricultural's assistant southern sales manager for 12 years, by accidental drowning, July 29 . . . O. B. Bartlett, manager of the Catawba Fertilizer, Lancaster, S. C., on Aug. 8, after an illness of 2 months . . . John A. McCarthy, vice-president and director, Anaconda Sales, suddenly on Aug. 25, at his summer home at Sayville, L. I.

Superphosphates in June

June superphosphate production was 21% larger than in '33, but was 26% smaller than '31. In the northern area there was an increase of 16%; in the southern area 33%. Production for 6 months, January-June, was 44% more than for '33, and was only slightly larger than for the same 6 months of 31. In the Northern Area there was an increase of 37%; in the Southern Area 49%.

Shipments superphosphate only to consumers, dealers, etc., for June, were 14% larger than for June, '33. In the Northern Area there was an increase of 32%; but in the Southern Area there was a decrease of 19%. Superphosphate in base and mixed goods shipped to mixers, other acidulators, and consumers, dealers, etc., during June, was 25% smaller than shipments for June, '33. In the Northern Area shipments were 7% smaller and in the Southern Area they were 44% smaller than for the June, 33, shipments. Shipments of superphosphate only to consumers, dealers, etc., for 6 months of 34 (January-June) were only fourtenths of one % smaller than the shipments for the 1st 6 months of '33. In the Northern Area they were 29% larger, but in the Southern Area they were 13% smaller than for the 1st six months of 1933.

'33-'34 Tag Sales

Courtesy, N. F. A.

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The Financial Markets

Slightly Higher

Market value of all stocks listed on the N. Y. Stock Exchange are higher Sept. 1 when compared with July close. Actual increase amounts to $1,866,022,-986 against a net loss of $3,687,886,059 in the previous month. In August chemical stock values rose from $3,377,338,-

Daily Record of Stock Market Trend

N. Y. Herald-Tribune

976 to $3,527,295,568, a net gain of $49,956,592 for the period. Average price rose from $46.87 to $48.94, a net increase of $2.07.

Practically all chemical stocks are higher. In the group of 11 given below, only one, Air Reduction, indicates a net loss in August and that of only 2 points. Trading is extremely light. As far as the public is concerned it is very definitely out of the market and even the professionals are largely holding aloof. Prices reached their highest point in the 3rd week of the month and then gradually drifted downward. Uncertainties of the business situation, plus the height of the vacation period are largely responsible for the August doldrums in the financial markets. Some concrete evidences of the return of better business and the beginning of a real Autumn upturn are vitally necessary to arouse bullish sentiments to a substantial buying pitch. A satisfactory ending to the textile strike, a rise in steel activity, and a more than seasonal rise in carloadings would, quite likely, prove satisfactory stimulus for a start.

Earnings

Earnings of leading chemical companies for the 1st 6 months continue to indicate improvement, however, over '33, as the following summaries of recent statements bear out:

Heyden Chemical and its subsidiary, report for 6 months ended June 30, consolidated net income of $285,033 after depreciation, federal taxes, etc., equal after dividend requirements on 7% preferred stock, to $1.87 a share (par $10) on 146,800 shares of common excluding 3,200 shares in treasury. Current assets as of June 30, including $263,238 cash and marketable securities at cost, amounted to $1,132,588 while current liabilities were $241,842. This compares with cash and marketable securities at cost, of $298,863, current assets of $1,018,796 and current liabilities of $228,188 on December 31, 1933.

Consolidated income account for 6 months ended June 30, follows: Net profit from operations $314,718; other income $34,024; total profit $348,742; other deductions, discount, etc., $21,-173; federal taxes $42,536; net profit $285,033; preferred dividends $10,850; common dividend, $87,819; surplus $186,364.

United Chemicals

United Chemicals, Inc., and subsidiaries report for 6 months ended June 30, net loss of $47,937 after depreciation, taxes, etc., comparing with net loss of $79,220 in 1st half of '33. Net loss for the quarter ended June 30, was $23,835 after depreciation, taxes, etc., compared with net loss of $24,102 in the preceding quarter.

Current assets as of June 30, last, amounted to $1,222,780 and current liabilities were $159,610, comparing with $1,213,208 and $93,105, respectively on June 30, 1933.

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Laboratories	50c	Sept. 14	Oct. 1
Abbott Laboratories ext.	10c	Sept. 14	Oct. 1
Am. Agr. Chemical ini.	50c	Sept. 20	Sept. 29
Archer-Daniels-Midland	25c	Aug. 21	Sept. 1
Archer-Daniels-Midland spec.	25c	Aug. 21	Sept. 1
Atlas Powder	50c	Aug. 31	Sept. 10
Colgate-Palmolive-Peet pf.	$1.50	Sept. 10	Oct. 1
Columbian Carbon	85c	Aug. 17	Sept. 1
du Pont de Nemours	65c	Aug. 29	Sept. 15
du Pont de Nemours, ext.	50c	Aug. 29	Sept. 15
du Pont de Nemours deb.	$1.50	Oct. 10	Oct. 25
Eastman Kodak	$1.00	Sept. 5	Oct. 1
Eastman Kodak, pf	$1.50	Sept. 5	Oct. 1
Freeport Texas	50c	Aug. 15	Sept. 1
Freeport Texas, pf	$1.50	Oct. 15	Nov. 1
Heyden Chemical	25c	Aug. 27	Sept. 1
Int'l Nickel	15c	Aug. 30	Sept. 29
Mathieson Alkali	37½c	Sept. 10	Oct. 1
Mathieson Alkali, pf	$1.75	Sept. 10	Oct. 1
Monsanto Chemical	25c	Aug. 25	Sept. 15
National Lead	$1.25	Sept. 14	Sept. 29
National Lead, pf A	$1.75	Aug. 31	Sept. 15
National Lead, pf B	$1.50	Oct. 19	Nov. 1
Patterson Sargent	25c	Aug. 17	Sept. 1
Penick & Ford	50c	Sept. 1	Sept. 15
Procter & Gamble 5% pf.	$1.25	Aug. 24	Sept. 15
Sherwin-Williams pf	$1.50	Aug. 15	Sept. 1
Spencer Kellogg	40c	Sept. 15	Sept. 29
St. Joseph Lead	10c	Sept. 7	Sept. 20
Texas Gulf Sulphur	50c	Sept. 1	Sept. 15
Union Carbide & Carbon	35c	Sept. 4	Oct. 1
United Carbon	60c	Sept. 15	Oct. 1
United Dyewood pf	$1.75	Sept. 14	Oct. 1
Vulcan Detinning pf	$1.75	Oct. 10	Oct. 20
Westvaco Chlorine	10c	Aug. 15	Sept. 1

Annual and Special Meetings

	Record Date	Meeting Date
American Agr. Chemical	Aug. 25	Sept. 19
Texas Gulf (special)	Aug. 24	Sept. 24
Vanadium Corp. of Am.	Aug. 11	Sept. 10

Columbian Carbon

Columbian Carbon and subsidiaries in preliminary statement for 6 months ended June 30, show net income of $1,-185,529 after taxes, depreciation, depletion and minority interests, equivalent to $2.20 a share on 538,420 shares of no-par stock. This compares with $486,-300 or 90c a share in first half of 1933. For quarter ended June 30, net income was $627,529 after charges and taxes, equal to $1.16 a share, comparing with $558,000 or $1.04 a share in preceding quarter and $243,967 or 45c a share in June quarter of previous year.

Consolidated income account for 6 months ended June 30, 1934, (subject to adjustment at end of year) compares as follows:

	1934	1933	1932
Net aft tax.	$1,686,470	$946,872	$1,032,431
Dep and depl.	467,928	494,586	600,562
Minority int.	†33,013	*34,014	*38,076
Net income.	$1,185,529	$486,300	$469,945

* Credit. † Debit.

Price Trend of Chemical Company Stocks

	Close July 31	Aug. 4	Aug. 11	Aug. 18	Aug. 25	Close Aug. 31	Net change	1934 High	1934 Low	1933 High	1933 Low
Allied Chem.	124⅜	124	126¾	126*	133½	130†	+5⅝	160¾	120	152	70¾
Air Reduction	99	96¾	97	98⅝	100¾	97	—2	106¼	91¾	112	47½
Anaconda	10¾	11⅛	12⅞	12⅛	13⅜	12¼	+1½	12¾	10	22⅞	5
Col. Carbon.	61¼	63½	66¼	66⅛	70	67	+5¾	77¼	58	71½	23⅛
Com. Solvents	16⅞	17⅝	18½	19	22⅛	21	+4⅛	36¾	15¾	57¾	9
du Pont	85⅞	85⅛	88	124¼	93½	90	+4⅛	103⅞	80	96⅜	32⅛
Mathieson	27⅜	27⅛	27¼	27¼	29¾	28⅛	+ ¾	40¾	24¾	46⅝	14
Monsanto	49	48⅛	50	51½	54⅜	53	+4	55½	39	83‡	25‡
St. of N. J.	41⅝	43	44	44⅝	45	44¼	+2⅝	50⅛	40⅝	47½	22¾
Texas Gulf S.	31⅝	31½	32	32⅞	35	34½	+2⅞	43¼	30	45¼	15¼
U. S. I.	37	36	37½	36½	41	40¼	+3¼	64¾	34½	94	13½

* Friday price; † Aug. 30 closing, no sales Aug. 31; ‡ Old stock.

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Latest Earnings Reports Summarized

Company:	Annual dividends	Net income 1934	Net income 1933	Common share earnings 1934	Common share earnings 1933	Surplus after dividends 1934	Surplus after dividends 1933
Abbott Laboratories:							
Six months, June 30	§$2.00	$375,815	$236,490	$2.59	$1.63	*.....	*.....
Air Reduction:							
June 30 quarter	3.00	1,216,532	720,485	1.46	.85	.....	.....
Six months, June 30	3.00	2,210,816	1,099,922	2.66	1.30	.....	.....
Amer. Agricultural Chemical:							
Year, June 30	z.50	977,119	†508,127	4.19	...	.....	.....
Amer. Zinc, Lead & Smelting:							
June 30 quarter	f...	88,738	148,204	p1.15	.16	.....	.....
Six months, June 30	f...	175,758	124,115	p2.28	p1.60	.....	.....
Colgate-Palmolive-Peet:							
Six months, June 30	f...	2,416,888	765,121	.84	.01	.....	.....
Flintkote:							
Sixteen weeks, July 14	f...	121,338	32,106	c.18	c.05	.....	.....
Twenty-eight weeks, July 14	f...	†15,020	†262,211	...	...	.....	.....
Liquid Carbonic Corp.:							
June 30 quarter	1.00	370,934	583,749	1.06	1.69	*.....	*.....
Nine months, June 30	1.00	108,607	†162,015	.31	...	*.....	*.....
National Lead Co.:							
Six months, June 30	5.00	2,006,753	1,698,352	4.06	2.82	424,943	93,005
New Jersey Zinc:							
June 30 quarter	2.00	994,304	933,002	.51	.48	12,672	d48,630
Six months, June 30	2.00	2,086,511	1,370,380	1.06	.70	123,247	d592,884
Paraffine Cos.:							
Year, June 30	2.00	2,018,120	395,358	4.24	.83	.....	.....
Procter & Gamble:							
June 30 quarter	1.50	3,230,708	3,738,572	h.47	h.54	.....	.....
Year, June 30	1.50	14,370,066	10,811,325	j2.09	h1.52	3,857,190	d1,446,590
St. Joseph Lead:							
Six months, June 30	z.10	†186,662	†1,303,212	...	...	.....	.....
United Carbon:							
June 30 quarter	1.76	360,510	171,760	.90	.38	*.....	*.....
Six months, June 30	1.76	670,373	300,731	1.65	.64	*.....	*.....
U. S. Industrial Alcohol:							
Six months, June 30	f...	352,275	299,155	h.90	h.80	.....	.....
Vulcan Detinning:							
June 30 quarter	....	70,897	77,914	1.35	1.56	.....	.....
Six months, June 30	....	158,259	94,996	3.21	1.25	.....	.....
Westvaco Chlorine Prods.:							
June 30 quarter	.40	152,750	105,614	.41	.24	*.....	*.....

§ Plus extras; * Not available; f No common dividend; p On preferred stock; z Last dividend declared; † Net loss; c On combined class A and class B shares; d Deficit; h On shares outstanding at close of respective periods.

A.A.C.

Report of American Agricultural Chemical (Delaware) and subsidiary companies for fiscal year ended June 30, certified by independent auditors, shows net profit of $977,119 after taxes, depreciation, depletion, provision for losses on time sales on shipments and reserve for self-insurance, equal to $4.19 a share on 233,206 no-par shares of capital stock, excluding 84,669 shares held in treasury. This compares with net loss of $508,127 in preceding year.

Current assets as of June 30, 1934, including $4,461,251 cash, amounted to $12,193,739 and current liabilities were $581,012, compared with cash of $5,201,959, current assets of $13,765,490 and current liabilities of $478,919 at end of preceding fiscal year. Consolidated income account for year ended June 30, 1934, compares as follows:

	1934	1933
Gross profit	$2,663,578	$1,176,557
Expenses	774,434	716,800
Prov. for loss on sales	259,859	299,916
Profit	1,629,285	159,841
Depreciation and depletion	531,551	567,568
Reserve for self-insurance	120,615	100,400
Net profit	$977,119	*$508,127

Archer-Daniels-Midland

Archer-Daniels-Midland and subsidiaries report for fiscal year ended June 30, net profit of $2,317,489 after depreciation and federal taxes, equivalent after 7% preferred dividend requirements, to $3.81 a share on 549,546 no-par shares of common. This compares with $1,209,293, or $1.79 a common share in preceding fiscal year.

* Loss.

Dividend Changes

Du Pont 50c extra proves disappointing in some quarters, inasmuch as G. M.'s 50c extra provided approximately 45c of the total. One forecast of 3rd quarter earnings indicates a $1.35 net, which would be the best showing for any quarterly period since '29. . . Archer-Daniels-Midland's earnings rate a 25c extra, is the opinion of company directors. . . United Carbon is now a $2.40 basis, 60c dividend being voted Aug. 17, payable Oct. 1 to stock of record of Sept. 15. . . Columbian Carbon is now paying 85c against former 75c. . . Spencer Kellogg is now on a 40c basis. Three months ago rate was raised from 25 to 30c.

Pittsburgh Plate—35c

With the declaration of a dividend of 35c a share on the common, payable Oct. 1, H. S. Wherett, president, Pittsburgh Plate Glass, reports earnings for the year are expected to cover dividend payments which will amount to $1.30 a share with the Oct. 1 disbursement. In '33 company paid 70c a share.

Hercules Declares

Hercules declares a dividend of 75c on the common payable Sept. 25 to stockholders of record Sept. 14.

Monsanto British Financing

Monsanto Chemicals, Ltd., British subsidiary of Monsanto sells to bankers £400,000 out of an authorized issue of £500,000 of its non-voting cumulative preferred. Offering to public will be made at 20s 6d per share, or 6d above par.

Finds requirements of British Securities Act reasonable

Prospectus discloses that there are no sinking fund requirements and that the issue may be retired before 1970 at 21s 6d, or 7½% premium. No guarantee by the parent company is involved. Monsanto Chemical retains all of the 600,000 shares of common.

Edgar M. Queeny, president, states that requirements of the British Securities Act are thorough but reasonable as to the amount of information required to be disclosed and that the preparation was not costly to their British company. He has no hesitancy in accepting liabilities imposed.

Over the Counter Prices

	June 30		July 31		Aug. 31	
Am. Hard Rubber	7¾	11½	..	8½	5½	8
Canadian Celanese, com.	17½	19½	16	18	16½	18¼
Canadian Celanese, pfd.	107	111	107	111	107½	110½
Dixon Crucible	53	57	..	50	42	47
Merck, pfd.	125	130	124	129	123	127
Tubize Chat., 7%, cum. pfd.	53¾	61	55	58	54	57
Worcester Salt	45	49	45	49½	42½	47½
Young, J. S., pfd.	98	..	99½	..	100	..
Young, J. S., com.	70	..	71	..	72	..

Foreign Markets

	July 2	July 31	Aug. 31
London			
British Celanese	12s 6d	10s 7½d	10s 9d
Celanese	£5	£3⅜	£4
Courtaulds	50s 4½d	44s 7½d	46s 4½d
Distillers	91s 9d	87s	88s 9d
I. C. I.	35s 7½d	35s 1½d	37s
Unilever, ord.	21s 7½d	19s	22s
Un. Molasses	19s 3d	17s 3d	19s 6d
Paris			
Kuhlmann	...	...	...
L'Air Liquide	750	700	690
Berlin			
I. G. Farben	147	147	148
Milan			
Snia Viscosa	232¼	261½	274¼
Montecatini	142½	155¼	158

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The Industry's Securities

1934 Last	1934 August High	1934 August Low	1933 High	1933 Low	1932 High	1932 Low	Sales	Stocks	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1933	Earnings $-per share-$ 1932
							Number of Shares						
NEW YORK STOCK EXCHANGE							1934	August					
97	106¼	91¾	112	47½	63½	30⅞	135,800	11,600	Air Reduction	No	841,288	$3.00*	3.79	2.73
130	160¾	120	152	70¾	88¼	42½	226,200	20,900	Allied Chem. & Dye	No	2,214,099	6.00	5.50	3.62
127	130	122⅛	125	115	120†	96½	7,500	300	7% cum. pfd.	100	345,540	7.00	42.24	29.12
38¼	41⅜	25¼	35	7¼	15½	3½	175,300	20,700	Amer. Agric. Chem.	100	315,701	2.00	p4.19	—p1.61
28½	62½	20¾	89⅞	13	27	11	482,200	34,400	Amer. Com. Alcohol	20	260,716	None	4.56	3.01
36	36	26¼	29¼	9¾	15½	7	84,500	13,500	Archer-Dan-Midland	No	541,546	1.00	1.82	q1.44
49¼	55½	35¼	39⅛	9	25½	7	67,800	3,400	Atlas Powder Co.	No	234,235	2.00	.74	—2.06
103¼	103½	83	83⅛	60	79½	45½	5,660	520	6% cum. pfd.	100	88,781	6.00	8.38	.47
20	44⅞	17⅛	58⅞	4½	125⅝	1¼	904,300	43,300	Celanese Corp. Amer.	No	987,800	None	3.32	— .95
143⅛	181⅛	93⅜	223⅛	7	31½	10¼	662,100	39,900	Colgate-Palm.-Peet	No	1,985,812	.50	— .57	— .74
94½	95	68½	88	49	95	65	11,100	1,700	6% pfd.	100	254,500	6.00	1.51	.21
67	77¼	58	71½	23⅛	41⅞	13½	271,600	18,900	Columbian Carbon	No	538,154	3.40	2.17	1.83
21	36¾	15¾	57¼	9	13¾	3½	2,303,600	139,200	Commer. Solvents	No	2,635,371	.60	.88	.51
61⅜	84½	55½	90⅝	45⅜	55⅜	24¾	293,700	59,100	Corn Products	25	2,530,000	3.00	3.87	2.77
147	148½	135	145¾	117½	140	99½	6,600	700	7% cum. pfd.	100	243,739	7.00	46.02	35.05
45	55⅛	29	33⅞	10	16¾	7	67,100	3,300	Devoe & Rayn. A	No	95,000	h1.00	3.82	—r1.00
90	103⅞	80	95⅞	32⅝	59¾	22	1,268,000	120,300	DuPont de Nemours	20	10,871,997	2.60	2.93	1.81
124	125	115	117	97½	105⅛	80¼	12,900	3,900	6% cum. deb.	100	1,092,699	6.00	35.58	24.00
99¾	101⅝	79	89¾	46	87¾	35¼	171,100	15,700	Eastman Kodak	No	2,250,921	4.00	4.76	2.52
140	147	120	130	110	125	99	1,800	260	6% cum. pfd.	100	61,657	6.00	180.34	98.27
30⅛	50⅜	26⅞	49⅜	16⅛	28⅝	10	253,900	16,300	Freeport Texas	10	784,664	2.00	3.01	2.75
116⅜	160⅛	116	160⅛	97	...	...	2,200	200	6% conv. pfd.	100	25,000	6.00	156.73	...
24⅞	28⅜	15⅝	20	3¾	10⅜	3⅛	706,400	34,300	Glidden Co.	No	603,304	1.00	1.54	—s.06
103⅜	104	83	91½	48	76	35	11,385	850	Glidden, 6% pfd.	100	63,044	7.00	22.60	7.85
85	96⅞	81½	85⅞	65	...	...	37,800	3,800	Hazel Atlas	25	434,409	5.00	6.22	4.68
73¼	81⅝	59	68⅝	15	29½	13⅞	71,800	6,600	Hercules Powder	No	582,679	3.00	2.79	.24
122⅞	125	111	110⅛	85	95	70½	3,600	220	7% cum. pfd.	100	105,765	7.00	22.38	8.39
23	30½	19⅜	85	24	40	7½	571,400	23,300	Industrial Rayon	No	600,000	1.68	3.01	.55
3½	6⅛	2	5⅞	⅞	3½	¼	222,600	20,000	Intern. Agricul.	No	436,049	None	—0.04	—4.47
25½	37¼	15	23½	5	15	3⅜	28,000	1,800	7% cum. pr. pfd.	100	100,000	None	—10.60	—8.48
25¼	29¼	21	23¼	6¾	12½	3½	2,605,500	224,600	Intern. Nickel	No	14,584,025	.35	.53	— .14
31½	32	21	27¾	13¾	23½	9¾	42,700	3,400	Intern. Salt	No	240,000	1.50	2.04	2.14
25¼	27¼	15¾	22	7½	11	8	50,900	8,400	Kellogg (Spencer)	No	500,000	1.00	.98	—v.26
29¼	43⅞	25¼	37⅜	4⅜	9⅜	3¾	726,700	34,400	Libbey Owens Ford	No	2,559,042	1.20	1.64	— .13
22	35⅜	16⅛	50	10¼	22	9	223,500	14,600	Liquid Carbonic	No	342,406	1.00	v1.05	—u1.29
28⅛	40¾	24¾	46⅝	14	20⅞	9	410,800	23,100	Mathieson Alkali	No	t650,436	1.50	1.70	.86
53	55½	39	83	25	30¾	13⅜	162,500	17,200	Monsanto Chem.	10	864,000	1.00	2.57	1.18
157	163	135	140	43¼	92	45	28,900	1,900	National Lead	100	309,831	5.00	6.98	3.15
144	145	122	128¼	101	125	87	4,200	300	7% cum. "A" pfd.	100	243,676	7.00	18.35	13.55
111½	113¼	100½	109⅛	75	105	61	1,710	210	6% cum. "B" pfd.	100	103,277	6.00	30.45	15.45
7¾	13	6	11¾	1⅜	3¾	1½	126,600	6,800	Newport Industries	1	519,347	None	.05	— .68
68¾	94	61½	96¾	31½	42¼	12	111,000	7,000	Owens-Illinois Glass	25	1,200,000	3.00	4.86	1.62
37¾	41¼	33⅛	47½	19⅝	42¾	19⅞	237,700	28,100	Procter & Gamble	No	6,410,000	1.50	1.52	q1.20
113½	114	102½	110¾	97	103½	81	5,145	240	5% pfd. (ser. 2-1-29)	100	171,569	5.00	61.95	52.16
5⅛	6¾	3⅛	7¼	1⅜	4⅜	1	87,700	6,200	Tenn. Corp.	5	857,896	None	— .11	— .89
34½	43¼	30	45¼	15¼	26¾	12	520,000	61,800	Texas Gulf Sulphur	No	2,540,000	2.00	2.93	2.33
42	50⅞	35⅞	51⅞	19¾	36⅜	15½	828,500	74,800	Union Carbide & Carbon	No	9,000,743	1.40	1.59	.98
41½	46½	35	37¾	10¼	18	6⅜	204,200	22,200	United Carbon	No	370,127	1.60	1.39	— .05
40¼	64¾	34½	94	13½	36¼	13¼	280,600	20,200	U. S. Indus. Alco.	No	391,033	None	3.56	.47
17½	31¾	14	36¼	7⅝	23¾	5¼	491,400	21,000	Vanadium Corp.-Amer.	No	366,637	None	—2.40	—4.36
3⅞	5⅜	1⅞	7⅜	⅝	2⅜	½	216,200	20,000	Virginia-Caro. Chem.	No	486,000	None	—5.06	—5.68
17¼	26	10	26½	3⅜	11¼	3⅛	71,800	15,900	6% cum. part. pfd.	100	213,392	None	—5.54	—6.96
82	84	59¾	63½	35⅜	69¾	20	4,860	800	7% cum. prior pfd.	100	60,000	None	—12.71	—7.83
20½	27¼	14⅞	20½	5	12⅝	3	123,850	9,000	Westvaco Chlorine	No	284,962	.40	1.08	.79
NEW YORK CURB EXCHANGE														
17¾	22½	14¾	16½	3¼	8½	1⅝	615,800	65,400	Amer. Cyanamid "B"	No	2,404,194	m.25	.99	.14
2⅝	4⅛	2⅝	4½	1	2⅛	¾	27,200	300	British Celanese Am. R.C.R.	243	.....	None	...	...
82¾	104¼	81	110	27	55	8	8,100	25	Celanese, 7% cum. 1st pfd.	100	144,379	7.00	32.24	.60
88	98½	83	90	51	64¼	17	3,475	.....	7% cum. prior pfd.	100	113,668	7.00	47.98	7.77
9	19	7	26⅞	2	5⅜	1½	18,800	1,200	Celluloid Corp.	15	194,952	None	—1.00	—3.79
11⅜	14⅜	10½	11⅝	4⅛	6⅞	4½	17,100	300	Courtaulds' Ltd.	1£	24,000,000	4½%	...	...
77	79½	67¼	78	30	39	21½	45,600	6,400	Dow Chemical	No	945,000	2.00	†3.60	†1.33
6⅞	10¼	4	8	½	1½	¼	50,100	600	Duval Texas Sulphur	No	500,000	None	z.17	z.30
30⅝	37	19	19	8	...	...	12,900	600	Heyden Chem. Corp.	10	147,600	1.00	2.68	1.23
45⅛	57½	39	39⅞	13	19½	12⅛	103,550	4,400	Pittsburgh Plate Glass	25	2,141,305	1.40	1.87	— .03
70	73⅛	47¼	47	12⅞	35	17½	109,690	8,250	Sherwin Williams	25	635,583	2.00	y3.54	— .44
107¾	107¾	100	99	80	100⅛	75	1,450	20	6% pfd. AA. cum.	100	155,521	6.00	y20.78	4.52
CLEVELAND STOCK EXCHANGE														
77	79½	67½	78	30	40	21½	8,641	486	Dow Chemical	No	945,000	2.00	†3.60	†1.33
PHILADELPHIA STOCK EXCHANGE														
62	62½	50¼	57	25¼	40	19⅞	2,275	850	Pennsylvania Salt	50	150,000	3.00	2.17	2.42

1934 Last	1934 August High	1934 August Low	1933 High	1933 Low	1932 High	1932 Low	Sales	Bonds	Date Due	Int. %	Int. Period	Out-standing $
NEW YORK STOCK EXCHANGE							1934	August				
102	103¼	93½	95	70½	80	62	1,126,000	179,000	Amer. Cyan. deb. 5s	1942	5	A. O.	4,411,000
96	99	83⅞	89	64	80	54¼	3,555,000	263,000	Amer. I. G. Chem. Conv. 5½'s	1949	5½	M. N.	29,929,000
8½	17¾	5	14⅛	2⅛	18	1	2,605,000	156,000	Anglo Chilean s. f. deb. 7's	1945	7	M. N.	12,700,000
75	88	61½	74⅞	37	60	34½	385,000	34,000	By-Products Coke Corp. 1st 5½'s "A"	1945	5½	M. N.	4,932,000
72	84½	62	65	38½	54⅞	32	204,000	8,000	Int. Agric. Corp. 1st. Coll. tr. stpd. to 1942	1942	5	M. N.	5,994,100
12	19½	5⅛	14⅞	2½	15¼	¼	9,554,000	544,000	Lautaro Nitrate conv. b's	1954	6	J. J.	31,357,000
92	98½	91	99⅛	87	97¾	67	480,000	45,000	Montecatini Min & Agric. det. 7's with war.	1937	7	J. J.	7,075,045
45	74½	45	62	33¾	59	17	410,000	4,000	Ruhr Chem. 6's	1948	6	A. O.	3,156,000
.....	.....	.....	76	50	66	39	190,000	35,000	Tenn. Corp. deb. 6's "B"	1944	6	M. S.	3,007,900
86½	89½	62	81	34¾	75	30	1,359,000	246,000	Vanadium Corp. conv. 5's	1941	5	A. O.	4,261,000
NEW YORK CURB EXCHANGE													
103¼	104¼	101⅜	103½	101	103⅛	99	76,000	5,000	Westvaco Chlorine Prod. 5½'s	1937	5½	M. S.	1,393,000

* Plus 75c extra; † Years ended 5-31-33-& 34; h Plus 25c ended 5-31-32-& 33; j Plus 75c ended 5-31-32-& 33; k Plus 75c ended 5-31-32-& 33; m Last paid, no regular rate; p Years ended 6-30-33 and 6-30-34; r Year ended 11-30-32; s Years ended 10-31-32 & 33; t Year ended 5-31-33 & 34; u Year ended 9-30-32; v Years ended 9-2-32 & 33; x Years ended 5-31-32 & 33; y Year ended 8-31-33; z Year ended 8-13-32.

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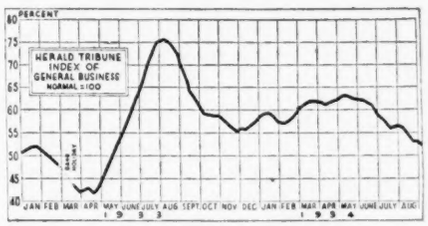
The Trend of Prices

Marking Time

Business in the last 2 weeks in August continued to show a strange anamoly—wholesale and retail business is expanding, but industrial activity in most manufacturing lines indicates a still further falling off. The seasonal rise, so confidently anticipated earlier in the summer, has as yet made no dramatic appearance. Instead, the country opens the "after Labor Day season" with a nation-wide textile strike on its hands, involving anywhere from 200,000 to 800,000 workers. With the usual Government mediation agencies stumped, the President is again resorting to the expedient that worked in the case of the recent threats of the steel and automotive workers, and a special committee will attempt to bring order again to the textile field. Stocks are heavy and no shortage is anticipated for several weeks.

The month closes with steel operations at the lowest point since March, '33. Electric output remains slightly ahead of corresponding figures for last year, but car loadings are running consistently below '33. Encouraging is the rate of activity being maintained in the Detroit automotive area. Other so-called heavy industries were generally operating at a slow pace in August, but increases in manufacturing schedules are expected very early in September. Larger buying is reported in paints, etc., articles likely to be favorably affected by Home Owners' Loan projects.

Trend of Business Activity


PERCENT
HERALD TRIBUNE INDEX OF GENERAL BUSINESS NORMAL=100
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG
1933
1934

N. Y. Herald-Tribune

Activity in the chemical industry is spotty at the moment, due largely to the situation in textiles and the low rate of activity in steel. Tanning operations are showing signs of betterment, and whether or not the Government opens idle tanneries and shoe factories to handle the surplus drought hides, or "farms" these out to private operators, there is likely to be a definite improvement in tanning chemicals in the next 60 days.. Paint manufacturing schedules are already expanding and good fall business is looked for in connection with the Federal modernization program. The National Paint, Varnish and Lacquer Association is actively supporting this drive. Chemical prices remain firm and advances still numerically outweigh declines. With the opening of the contract season but a month or so away, both producers and buyers are beginning to give serious thought to '35 prices.

While there is no gainsaying the fact that in many business quarters a feeling of pessimism exists, and such instances as the resignation of Budget Controller Douglas and the President Green Bay speech are not helpful in dispelling this feeling, it is, nevertheless, plain that business men generally look for an early upturn and view the present state of uncertainty simply as temporary. One searching diligently enough can readily find plenty of convincing evidences of the truth of this statement. Already orders for Christmas sales are far ahead of the records of the last 3 years. Higher prices for cotton and other agricultural products will more than offset the damage done to the purchasing power of the farmer in the Mid-West and South, and in addition, the rather lavish Governmental aid in these stricken areas will augment agricultural purchasing power. By far and large the most serious situation at the moment is the possible extent of the textile strike.

Monthly Statistics of Business

	July 1934	July 1933	June 1934	June 1933	May 1934	May 1933
Auto production	266,575	229,357	308,051	249,727	331,652	214,411
Bldg. contracts*‡	$119,698	$82,554,400	$127,131	$103,255	$134,445	$131,413
Failures, Dun & Bradstreet	912	1,421	1,033	1,648	977	1,909
Merchandise imports‡	$127,342	$142,980	$136,082	$122,197	$154,647	$106,869
Merchandise exports‡	$166,787	$144,109	$170,574	$119,790	$160,207	$114,203
Newsprint production						
Canada, tons	208,238	180,387	229,637	171,419	242,539	171,776
U. S., tons	76,184	79,482	83,504	84,384	89,726	79,516
Newfoundland, tons	27,298	21,178	28,571	20,672	28,148	21,747
Total, tons	313,767	282,336	343,525	277,871	362,079	274,373
Newsprint shipments						
Canada, tons	199,926	181,658	225,449	171,678	236,969	165,520
U. S., tons	70,133	82,068	79,721	87,359	90,951	77,196
Total (U. S. & Can.)	270,059	263,726	305,170	259,037	327,920	242,716
Plate glass production, sq. ft.	.....	.....	6,520,081	9,499,260	7,764,477	8,922,434
Shoe production, pairs	.....	.....	27,783,201	34,861,123	33,873,596	32,965,000
Steel ingots	1,472,584	3,168,354	3,015,972	2,564,420	3,396,283	2,001,994
Steel activity, % of capacity	26.75	58.30	52.18	45.37	56.39	33.68
U. S. consumption crude rubber, tons	32,647	49,614	40,242	51,329	42,021	44,074
Tire shipments	.....	.....	5,228,251	6,305,454	5,331,699	5,180,173
Tire production	.....	.....	4,342,170	6,099,924	4,456,223	5,189,291
Tire inventory	.....	.....	10,219,360	6,614,940	11,126,567	6,760,165
Payroll totals†	60.4	50.8	64.8	47.2	67.1	42.7
Factory employment†	78.6	71.5	81.0	67.4	82.4	62.6
Dept. of Labor Chem. price index†	.....	.....	78.6	81.5	78.6	80.9
Dept. of Labor Chem. employment†	112.3	87.9	111.7	80.5	111.2	76.7
Dept. of Labor Chem. payrolls†	96.6	74.4	96.1	68.2	94.4	62.8
Chemicals and Related Products						
Imports‡	.....	.....	$4,418	.....	$5,862	.....
Exports‡	.....	.....	$8,189	.....	$7,335	.....
Stocks of raw materials†	.....	.....	88	87	88	90
Stocks, mfd. goods‡	.....	.....	110	107	119	112
Electrical consumption by chemicals and allied products†	.....	.....	161.0	135.7	154.5	127.1

* 37 states, F. W. Dodge Corp.; ‡ 000 omitted; †Dept. of Labor, 3-year average, 1923-1925 = 100.0.

Weekly Business Statistics

Week Ending	Carloadings 1934	Carloadings 1933	Carloadings % Inc.	Electrical Output* 1934*	Electrical Output* 1933*	Electrical Output* % Inc.	Jour. of Com. Price Index	Nat'l Fertilizer Assn. Indices: Metals	Fats & Oils	Chem. & Drugs	Mixed Fert.	Fert. Mat.	All Groups	Labor Dept. Chem. & Drug Price Index	% Steel Activity	Fisher's Index Purch. Power	N. Y. Times Indexes Bus. Act.
July 28	608,848	644,839	—5.6	1,683,542	1,661,504	1.3	76.2	82.1	52.0	93.2	76.1	67.1	72.3	75.6	26.1	128.6	79.8
Aug. 4	611,298	620,482	—1.5	1,657,638	1,650,013	0.5	76.1	82.0	54.2	93.2	76.1	65.4	73.1	75.5	25.8	128.4	...
Aug. 11	602,530	629,743	—4.3	1,659,043	1,627,339	1.9	76.6	82.1	57.1	93.2	76.1	66.6	74.0	75.9	22.3	128.5	79.1
Aug. 18	600,564	643,406	—6.7	1,674,345	1,650,205	1.5	77.6	82.0	58.3	93.2	76.3	66.7	74.2	75.9	21.3	128.5	76.5
Aug. 24	605,516	637,510	—5.0	1,648,107	1,630,394	1.1	79.0	81.8	59.6	93.4	76.3	64.8	75.0	76.0	19.1	127.5	...
Sept. 1	645,780	673,778	—4.2	1,626,881	1,637,317	—0.6	79.8	81.9	60.2	93.4	76.3	64.8	75.9	...	18.4	125.5	...

* kw. 000 omitted.

Prices Current

Heavy Chemicals, Coal-tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Import chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1933 Average $1.56 - Jan. 1934 $1.37 - August 1934 $1.28

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Acetaldehyde, drs lc-1 wks.lb.	...	.16	.16	.21	.18½ .21
drums, c-l, wks.....lb.	...	.14	.14	.16½	... ...
Acetaldol, 95%, 50 gal dr. wks	.21	.25	.21	.31	.27 .31
Acetamide .....lb.	.38	.43	.40	1.35	.95 1.35
Acetanilid, tech, 150 lb bbl.lb.	...	.26	...	.26	... .26
Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.21	.25	.21	.25	.21 .25
Acetin, tech drums.....lb.	.30	.32	.30	.32	.30 .32
Acetone, tanks.....lb.	...	.10	...	.10	.08 .10
Acetone Oil, bbls NY....gal.	1.15	.25	1.15	.25	1.15 1.25
Acetyl Chloride, 100 lb cby.lb.	.55	.68	.55	.68	.55 .68
Acetylene Tetrachloride (see tetrachlorethane)					
Acids					
Acid Abietic	.06¾	.07	.06	.07	.06 .12
Acetic, 28% 400 lb. bbls c-1 wks .....100 lb.	...	2.66	2.66	2.91	2.65 2.91
Glacial, bbl c-1 wk..100 lb.	...	9.13	9.13	10.02	9.14 10.02
Adipic .....lb.	.72	.72	.72	.72	.72 .72
Anthranilic, refd, bbls.....lb.	.85	.95	.85	.95	.85 .95
Technical, bbls.....lb.	.65	.70	.65	.70	.65 .70
Battery, cbys .....100 lb.	1.60	2.25	1.60	2.25	1.60 2.25
Benzoic, tech, 100 lb bbls.lb.	.40	.45	.40	.45	.35 .45
Boric, powd, 250 lb bbls...lb.	.0425	.05	.0425	.05	.0425 .05
Broenner's, bbls.....lb.	1.20	1.25	1.20	1.25	1.20 1.25
Butyric, 100½ basis cbys.lb.	.80	.85	.80	.85	.80 .85
Camphoric .....lb.	...	5.25	...	5.25	... 5.25
Chlorosulfonic, 1500 lb drums wks. .....lb.	.04½	.05½	.04½	.05½	.04½ .05½
Chromic, 99¾%, drs....lb.	.13½	.15½	.13½	.15½	.11½ .14¼
Chromotropic, 300 lb bbls.lb.	1.00	1.06	1.00	1.06	1.00 1.06
Citric, USP, crystals, 230 lb. bbls. .....lb.	.28	.29	.28	.30	.29 .30
Cleve's, 250 lb bbls.....lb.	.54	.54	.52	.54	.52 .54
Cresylic, 95%, dark drs N Y .....gal.	.54	.56	.50	.56	.38 .50
97-99%, pale drs NY..gal.	.59	.61	.55	.60	.40 .55
Formic, tech 90%, 140 lb. cby .....lb.	.11	.13	.11	.13	.10½ .13
Furoic, tech, 100 lb drums.lb.	...	.35	...	.35	... .35
Gallic, tech, bbls.....lb.	.60	.70	.60	.70	.60 .70
USP, bbls.....lb.	...	.77	.74	.77	... .74
Gamma, 225 lb bbls wks..lb.	.77	.79	.77	.79	.75 .79
H, 225 lb bbls wks.....lb.	.65	.70	.65	.70	.60 .70
Hydriodic, USP, 10% soln cby .....lb.	.50	.51	.50	.51	.50 .51
Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.45	.48	.45 .48
Hydrochloric, CP, see Acid Muriatic					
Hydrocyanic, cyl. wks....lb.	.80	.90	.80	.90	.80 .90
Hydrofluoric, 30%, 400 lb bbls wks.....lb.	...	.07	...	.07	.06 .07
Hydrofluosilicic, 35%, 400 lb. bbls wks.....lb.	.11	.12	.11	.12	.11 .12
Hypophosphorous, 30%, USP, demijohns .....lb.	.75	.80	.75	.80	.75 .80
Lactic, 22%, dark, 500 lb. bbls. .....lb.	.04	.04½	.04	.04½	.04 .04½
44%, light, 500 lb bbls..lb.	.11½	.12	.11½	.12	.11½ .12
Laurent's, 250 lb bbls.....lb.	.36	.37	.36	.37	.36 .37
Linoleic .....lb.	.16	.16	.16	.16	.16 .16
Maleic, cry. kegs.....lb.	...	.35	...	.35	... ...
Malic, powd, kegs.....lb.	.45	.60	.45	.60	.45 .60
Metanilic, 250 lb bbls....lb.	.60	.65	.60	.65	.60 .65
Mixed Sulfuric—Nitric ..... tanks wks.....N unit	.06½	.07¼	.06½	.07¼	.06½ .07¼
tanks wks.....S unit	.008	.01	.008	.01	.008 .01
Monochloroacetic, tech bbl.lb.	.16	.18	.16	.18	.16 .18
Monosulfonic, bbls.....lb.	1.50	1.60	1.50	1.60	1.50 1.60
Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	...	1.35	...	1.35	... 1.35
tanks, wks.....100 lb.	...	1.00	...	1.00	... 1.00
20 degrees, cbys wks.100 lb.	...	1.45	...	1.45	... 1.45
N & W.....250 lb bbls.	.85	.95	.85	.95	.85 .95
Naphthenic, drums .....lb.	.12	.13	.10	.13	.10 .11½
Naphthionic, tech.....250 lb.	.60	.65	.60	.65	.60 .65
Nitric, 36 deg, 135 lb cbys c-wks .....100 lb.	...	5.00	...	5.00	... 5.00
40 deg, 135 lb cbys, c-1 wks. .....100 lb.	...	6.00	...	6.00	... 6.00
Oxalic, 300lb bbls wks NY.lb.	.11⅞	.12⅜	.11⅞	.12⅜	.11 .12⅜
Phosphoric 50%, USP....lb.	...	.14	...	.14	... .14
50%, acid, c.l. drums..lb.	.05	.05	.05	.05	.05 .05
75%, acid, c.l. drums..lb.	.07	.07	.07	.07	.07 .07
Picramic, 300 lb bbls.....lb.	.65	.70	.65	.70	.65 .70
Picric, kegs.....lb.	.30	.50	.30	.50	.30 .50
Pyrogallic, crystals .....lb.	1.60	1.65	1.40	1.65	1.40 1.45
Salicylic, tech, 125 lb bbl..lb.	.33	.37	.33	.37	.33 .37
Sebacic, tech, drum.....lb.	.58	.58	.58	.58	.58 .58
Sulfanilic, 250 lb. bbls....lb.	.18	.19	.18	.19	.15 .17
Sulfuric, 66 deg, 180 lb. cbys 1c-1 wks.....100 lb.	1.60	1.95	1.60	1.95	1.60 1.95

† Anhydrous 5c higher *Delivered metropolitan area, basic price 33c. §Higher price is refrigeration grade.

* Delivered Metropolitan area.

the cost of tax paid ethyl alcohol. Quotation above includes this tax. Grain alcohol is 20c a gal. higher.

	Current Market	1934 Low	1934 High	1933 Low	1933 High
tanks, wks.....ton	...	15.00	...	15.00	... 15.00
1500 lb dr wks....100 lb.	1.50	1.65	1.50	1.65	1.50 1.65
60°, 1500 lb dr wks..100 lb.	1.27½	1.42½	1.27½	1.42½	127½ 1.42½
Oleum, 20%, 1500 lb. drs 1c-1 wks.....ton	...	18.50	...	18.50	... 18.50
40%, 1c-1 wks net.....ton	...	42.00	...	42.00	... 42.00
Tannic, tech, 300 lb bbls.lb.	.23	.40	.23	.40	.23 .40
Tartaric, USP, gran. powd, 300 lb bbls.....lb.	...	.25	.25	.26	.20 .25
Tobias, 250 lb bbls.....lb.	.75	.80	.75	.80	.75 .80
Trichloroacetic bottles..lb.	2.00	2.75	2.00	2.75	2.00 2.75
Kegs .....lb.	...	1.75	...	1.75	... 1.75
Tungstic, bbls.....lb.	1.35	1.45	1.35	1.70	1.40 1.70
Albumen, blood,225 lb bbls.lb.	.45	.53	.35	.53	.35 .43
dark .....bbls., lb.	.12	.17	.10	.17	.10 .17
Egg, edible .....lb.	.82	.86	.82	.92	.74 .90
Technical, 200 lb cases.lb.	.62	.66	.62	.66	.62 .66
Vegetable, edible.....lb.	.65	.70	.65	.70	.60 .70
Technical .....lb.	.50	.55	.50	.55	.50 .55
Alcohol Butyl, Normal, 50 gal drs c-l wks.....lb.	...	.12	.10½	.12	... .10½
Drums, l-c-l wks.....lb.	...	.11½	.11	.11½	... .11
Tank cars wks.....lb.	...	.10½	.09½	.10½	... .09½
Secondary tank.....lb.	...	.076	...	.076	... ...
drums carlots .....lb.	...	.086	...	.086	... ...
Amyl (from pentane) Tanks, del.....lb.	...	.143	...	.143	.143 .176
Drums, del.....lb.	.15	.157	.15	.157	... ...
Tertiary, drums, del....lb.	.082	.093	.082	.093	... ...
Tanks, del.....lb.	...	.052	...	.052	... ...
Capryl, tech, drums....lb.	...	.85	...	.85	... .85
Diacetone, tanks.....lb.	.15¾	.16¾	.15¾	.16¾	.15¾ .16¾
Ethyl, USP, 190 pf, 50 gal. bbls .....gal.	...	4.15½	4.12½	4.24½	2.44½ 2.65
No. 5. *188 pf, 50 gal. drs., drums extra..gal.	.34*	.421*	.30*	.421*	... ...
No. S. D. 1, tanks...gal.	...	.295	.29½	.304	... .304
Furfuryl, tech., 500 lb. drs. .....lb.	...	.35	.35	.40	.40 .45
Isobutyl, ref., gal. drs..gal.	...	.75	...	.75	... .75
Isopropyl, ref, gal drs...gal.	...	.50	...	.50	.45 .50
Propyl Normal, 50 gal dr. .....gal.	...	.75	...	.75	... .75
Aldehyde Ammonia, 100 gal. dr. .....lb.	.80	.82	.80	.82	.80 .82
Alpha-Naphthol, crude, 300 lb. bbls. .....lb.	.65	.70	.65	.70	.65 .70
Alpha-Naphthylamine, 350 lb. bbls. .....lb.	.32	.34	.32	.34	.32 .34
Alum Ammonia, lump, 400 lb. bbls, 1-c-1 wks..100 lb.	2.90	3.25	3.00	3.25	3.00 3.25
Chrome, 500 lb casks, wks .....100 lb.	7.00	7.25	6.50	7.25	4.50 6.50
Potash, lump, 400 lb casks wks .....100 lb.	2.90	3.25	3.00	3.50	3.00 3.50
Soda, ground, 400 lb bbls wks .....100 lb.	3.50	3.75	350	3.75	3.50 3.75
Aluminum Metal, c-1 NY .....100 lb.	20.00	23.30	20.00	24.30	22.00 24.30
Chloride Anhyd., 99%, wks .....lb.	.07	.12	.07	.12	... ...
93% grade, wks.....lb.	.04	.08	.04	.08	... ...
Hydrate, 96%, light, 90 lb. bbls. .....lb.	.13	.15	.13	.16½	.15 .16½
Oleate, drums.....lb.	...	.15¾	...	...	... ...
Palmitate, bbls. .....lb	.20	.21	.19	.21	... ...
Resinate, pp., bbls. ....lb.	....	.15	.12½	.15	... ...
Stearate, 100 lb bbls.....lb.	.17	.19	.17	.18	.12½ .18
Sulfate, Iron, free, bags c-1 wks .....100 lb.	1.90	1.95	1.90	1.95	1.90 1.95
Coml, bags c-1 wks 100 lb.	1.35	1.50	1.35	1.50	1.25 1.50
Aminoazobenzene, 110 lb kegs .....lb.	...	1.15	...	1.15	... 1.15
Ammonia					
Ammonia anhydrous Com. tks.	.04½	.05½§	.04½	.05½§	.04½ .05½
Ammonia anhyd, 100 lb cyl lb.	.15¼	.15½	.15¼	.15½	.15¼ .15½
Water, 26°, 800 lb dr del.lb.	.02½	.03	.02½	.03	.02½ .03
Ammonia, aqua 26° tanks.. NH cont.	...	.05	...	.05	... .05
Ammonium Acetate.....lb.	.26	.33	.26	.33	.26 .33
Bicarbonate, bbls., f.o.b. plant .....100 lb.	...	5.15	...	5.15	... 5.15
Bifluoride, 300 lb bbls..lb.	.15¼	.17	.15¼	.17	.15¼ .17
Ammonium carbonate, tech, 500 lb cs.....lb.	.08	.12	.08	.12	.08 .12
Chloride, White, 100 lb. bbls, wks .....100 lb.	5.00	5.25	5.00	5.25	4.45 5.25
Gray, 250 lb bbls wks.lb.	5.25	5.75	5.25	5.75	5.25 5.75
Lump, 500 lbs cks spot.lb.	.10	.11	.10	.11	.10 .11
Lactate, 500 lb bbls.....lb.	.15	.16	.15	.16	.15 .16
Linoleate .....lb.	...	.12	.11	.12	... .11
Nitrate, tech, casks.....lb.	.03¾	.05	.03¾	.05	.03¾ .10
Oleate, drs.....lb.	...	.10	...	.10	... .10
Persulfate, 112 lb kegs..lb.	.20	.22½	.20	.22½	.20 .22½
Phosphate, tech, powd, 325 lb. bbls .....lb.	.08	.10	.08	.11½	.08½ .11½

Prices Current

		Current Market	1934 Low	1934 High	1933 Low	1933 High
Ammonium sulfate, bulk c-l	100 lb.	...	1.20	1.10	1.25	1.00	1.25
Sulfocyanide, kegs	lb.	...	.50	...	.50	.36	.50
Amyl Acetate, (from pentane) Tanks del.	lb.	...	.13½	...	.13½	...	.13½
Tech., drs. del.	lb.	.142	.149	.142	.149	.138	.149
Secondary, tanks	lb.	...	.09	...	.09	...	.09
Amyl Alcohol, see also Fusel Oil							
Amyl Alcohol, sec.	lb.	...	.08½	.08½	.08½	...	...
Chloride, normal, drums, wks.	lb.	.56	.68	.56	.68	...	...
Chloride, mixed, drums, wks.	lb.	11.5	12.2	11.5	12.2	...	...
tank wks.	lb.	...	10.5	...	10.5	...	...
Lactate, wks, drums	lb.	...	.50	...	.50	...	...
Mercaptan, wks, drums	lb.	...	1.10	...	1.10	...	...
Stearate, wks, drums	lb.	...	.31	...	.31	...	...
Amylene, drums, wks.	lb.	.10	.11	.10	.11	...	...
tanks, wks.	lb.	...	.09	...	.09	...	...
Aniline Oil, 960 lb drs & tks	lb.	.15	.17½	.15	.17½	.14½	.16
Annatto fine	lb.	.34	.37	34	.37	.34	.37
Anthracene, 80%	lb.	...	.75	.	.75	...	...
40%	lb.	...	.18	...	.18	...	...
Anthraquinone, sublimed, 125 lb. bbls.	lb.	...	.45	...	.45	...	.45
Antimony, metal slabs, ton lots	lb.	...	.08¾	.07	.08⅞	.05⅝	.07½
Needle, powd., bbls.	lb.	.07	.08	.07	.09	.07	.09
Chloride, soln (butter of) cbys	lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls.	lb.	.09¼	.09½	.08	.11	.07½	.11
Salt, 63% to 65%, tins	lb.	.22	.24	.22	.24	.20	.24
Sulfuret, golden, bbls.	lb.	.16	.20	.16	.20	.16	.20
Vermilion, bbls.	lb.	.35	.42	.35	.42	.38	.42
Archil, conc, 600 lb bbls.	lb.	.21	.27	.21	.27	.20	.21
Double, 600 lb bbls.	lb.	.18	.20	.1	.20	.16	.17
Triple, 600 lb bbls.	lb.	.18	.20	.18	.20	.16	.17
Argols, 80%, casks	lb.	.15	.16	.15	.16	.12	.15
Crude, 30%, casks	lb.	.07	.08	.07	.09	.06¾	.09
Aroclors, wks	lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbl.	lb.	.08¾	.09¾	.08¾	.09¼	...	...
Arsenic, Red, 224 lb kegs, cs.	lb.	.15	.15½	.14	.15½	.09⅜	.14¾
White, 112 lb kegs	lb.	.04	.05	.04	.05	.04	.05
Metal	lb.	.40	.42.	40	.45	...	...
Asbestine, c-l wks.	ton	13.00	15.00	13.00	15.00	13.00	15.00
Barium Carbonate, precip, 200 lb. bags wks‡	ton	56.50	61.00	56.50	61.00	56.50	61.00
Nat. (witherite) 90% gr. car-lots wks bags	ton	...	45.00	...	45.00	...	...
Chlorate, 112 lb kegs NY	lb.	.15	.16	.15	.16	.13¾	.16
Chloride, 600 lb bbl wks.	ton	72.00	74.00	72.00	74.00	61.50	74.00
Dioxide, 88%, 690 lb drs.	lb.	.11	.13	.11	.13	.11	.13
Hydrate, 500 lb bbls.	lb.	.05	.06	.04¾	.06	.04¼	.05
Nitrate, 700 lb casks	lb.	...	.08¼	...	.08¼	...	.07¼
Barytes, Floated, 350 lb bbls wks	ton	23.00	30.50	23.00	30.50	22.20	30.50
Bauxite, bulk, mines	ton	7.00	10.00	5.00	10.00	5.00	6.00
Bayberry, bags	lb.	.26	.30	.25	.30	.14½	.17
Beeswax, Yel., crude bags.	lb.	.21½	.22	.16	.22	.13	.20
Refined, cases	lb.	.26	.29	.21	.29	.18	.26
White, cases	lb.	.34	.37	.32	.37	.30	.35
Benzaldehyde, technical, 945 lb. drums wks.	lb.	.60	.65	.60	.65	.60	.65
Benzene, 90%, Industrial, 8000 gal tanks wks.	gal.	...	.19	.19	.20½	.20	.22
Ind. Pure, tanks wks.	gal.	...	.19	.19	.20½	.20	.22
Benzidine Base, dry, 250 lb. bbls.	lb.	.67	.69	.67	.69	.65	.67
Benzoyl, Chloride, 500 lb drs.	lb.	.40	.45	.40	.45	.40	.45
Benzyl Chloride, tech drs.	lb.	...	.30	...	.30	...	.30
Beta-Naphthol, 250 lb bbl wk	lb.	...	.24	...	.24	...	.24
Naphthylamine, sublimed 200 lb bbls.	lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech. 200 lb bbls.	lb.	.53	.58	.53	.58	.53	.58
Bismuth, metal		...	1.20	1.20	1.30	.85	1.30
Bismuth Subnitrate		1.55	1.60	1.40	1.60	.95	1.40
Blackstrap, cane, (see Molasses, Backstrap)							
Blanc Fixe, 400 lb bbls wks	ton	42.50‡	70.00	42.50‡	70.00	42.50	75.00
Bleaching Powder, 800 lb drs c-l wks contract	100 lb.	...	1.90	...	1.90	1.75	1.90
Blood, Dried, fob, NY.	unit	...	3.00	2.40	3.25	1.55	2.75
Chicago, high grade.	unit	...	2.50	2.00	3.10	...	...
S. American shipt.	unit	...	3.00	2.75	3.15	1.90	3.00
Blues, Bronze Chinese Milori							
Prussian Soluble.	lb.	.35½	.37½	.35½	.37½	...	.35
Bone, raw, Chicago.	ton	21.00	22.00	20.00	25.00	19.00	28.00
Bone Ash, 100 lb kegs.	lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls.	lb.	.05½	.08¼	.05½	.08¼	.05½	.08
Meal, 3% & 50%, Imp.	ton	17.00	19.00	16.00	20.00	18.00	27.50
Borax, bags	lb.	.018	.02	.018	.02	.018	.02
Bordeaux, Mix. 16% pwd.	lb.	.08	.16½	.08	.16¼	.11½	.13
Brazilwood, sticks, shpmt.	lb.	26.00	28.00	26.00	28.00	26.00	28.00
Bromine, cases	lb.	.36	.43	.36	.43	.36	.43
Bronze, Alumi., pwd blk.	lb.	.50	.75	.50	.75	.50	.75
Gold bulk	lb.	.40	.55	.40	.55	.40	.55
Butanes, com 16.32° group 3 tanks	lb.	.02¾	.04	.02¾	.04	.02¾	.04
Butyl, Acetate, normal drs.	lb.	...	.12	.11	.12	.11	.139
Tank, wks	lb.	...	.11	.10	.11	.10	.124
Secondary tanks, wks.	lb.	...	.08	...	.08	...	...
Aldehyde, 50 gal drs wks.	lb.	.35	.36	.35	.36	.31½	.36
Carbitol see Diethylene Glycol Mono (Butyl Ether).		...	...	...	...	...	..

‡Lowest price is for pulp; highest for high-grade precipitate

EXPRESS TANK BUS DELIVERIES

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BENZOL
TOLUOL
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SOLVENT NAPHTHA

In evaporation range, boiling range, specific gravity, miscibility and color, Barrett Standard Coal-Tar Solvents offer a wide variety of uniformly dependable products. All are made to rigid specification under strict laboratory control.

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PHENOL (Natural), U. S. P. 39.5° M. Pt., 40° M. Pt., Technical 39° M. Pt., Crude 82-84% and 90-92% . . . CRESOL: U. S. P., Meta Para, Ortho, Special Fractions . . . CRESYLIC ACID: 99% Straw Color and 95% Dark . . . XYLENOLS . . . TAR ACID OILS . . . NAPHTHALENE; Crude, Refined Chipped, Flake and Ball . . . RUBBER SOFTENERS . . . CUMAR*: Paracoumarone-indene Resin . . . BARRETAN* . . . PICKLING INHIBITORS . . . PYRIDINE: Refined Denaturing and Commercial . . . PICOLINES . . . QUINOLINES . . . FLOTATION OILS and REAGENTS . . . HYDROCARBON OIL . . . SHINGLE STAIN OIL . . . SPECIAL HEAVY OIL . . . HI-FLASH NAPHTHA

*Reg. U. S. Pat. Office.

THE BARRETT COMPANY
40 Rector Street New York, N. Y.

The following

ORGANIC CHEMICALS

ARE AVAILABLE FOR SPOT OR CONTRACT SALE

1:2:4 ACID
ACETYL ORTHO-TOLUIDINE
ALPHA-NAPHTHOL
ALPHA-NAPHTHYLAMINE
ALPHA-NITRONAPHTHALENE
AMINOAZOBENZENE-SODIUM-SULFONATE
AMINOAZOTOLUENE
AMINO G SALT
AMINO J SALT
ANILINE
ANTIOXIDANTS
BENZIDINE (BASE)
BENZOIC ACID, TECHNICAL
BETA-HYDROXYNAPHTHOIC ACID
BETA-NAPHTHYLAMINE
BROENNER'S ACID
CATECHOL
CHICAGO ACID
CLEVE'S ACIDS
CRESIDINE
DENATURED ALCOHOLS
DIANISIDINE (BASE)
DIBENZYL-PARA-AMINOPHENOL
DIBUTYLAMINE
DIETHYLANILINE
DIETHYL-META-AMINOPHENOL
DIMETHYLAMINE
DIMETHYLANILINE
DINITROBENZENE
DINITROCHLOROBENZENE
DINITROPHENOL
DINITROSTILBENEDISULFONIC ACID
DINITROTOLUENE
DINITROTOLUENE OIL
DI-ORTHO-TOLYLTHIOUREA
DIPHENYLAMINE
EPSILON ACID
ETHER
ETHYLACETANILIDE
ETHYL ALCOHOL
ETHYLBENZYLANILINE
FLOTATION REAGENTS
GAMMA ACID
G SALT
INHIBITORS
J ACID
KOCH ACID
L ACID
LAURENT'S ACID
METANILIC ACID
META-NITROANILINE
META-NITRO-PARA-TOLUIDINE
META-NITROTOLUENE
META-PHENYLENEDIAMINE
META-TOLUIDINE
META-TOLYLENEDIAMINE
META-XYLIDINE

DU PONT
REG. U. S. PAT. OFF.

E. I. DU PONT DE NEMOURS & COMPANY, INC.
Organic Chemicals Department
Wilmington, Delaware

Butyl Carbinol
Cobalt Resinate

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Butyl carbinol, sec., drums..lb.	.60	.75	.60	.75	...	...
Carbinol, normal, drms, wks, ...lb.	.60	.75	.60	.75	...	...
Cellosolve (see Ethylene glycol mono butyl ether)						
Furoate, tech, 50 gal dr..lb.	...	.65	.60	.65	.50	.60
Lactate, drums.....lb.	...	.29	...	.29	...	...
Propionate, drs.....lb.	.17	.18	.17	.22	.20	.22
Stearate, 50 gal drs.....lb.	.25	.25½	.25	.25½	.25	.25
Tartrate, drs.....lb.	.55	.60	.55	.60	.55	.60
Cadmium, Sulfide, boxes..lb.	.70	.75	.65	.75	.65	.75
Calcium, Acetate, 150 lb bags c-l .....100 lb.	2.50	3.00	2.50	3.00	2.50	3.00
Arsenate, 100 lb bbls c-l wks .....lb.	.05	.05½	.05	.07	.05½	.07
Carbide, drs.....lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bags c-l.....lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, Flake, 375 lb drs c-l wks.....ton	...	19.50	...	19.50	19.50	21.00
Solid, 650 lb drs c-l fob wks .....ton	...	17.50	...	17.50	17.50	18.00
Ferrocyanide, 350 lb. f.o.b. wks. .....lb.	...	.17	...	.17	.17	.17
Furoate, tech, 100 lb.dr..lb.	...	.25	.25	.30	...	.30
Gluconate, tech, 125 lb. bbls. .....lb.	...	.25	...	...	...	...
Nitrate, 100 lb bags....ton	...	26.50	...	26.50	24.00	26.50
Palmitate, bbls. .....lb.	.20	.21	.19	.20	.16	.19
Perioxide, 100 lb drs....lb.	...	1.25	...	1.25	...	1.25
Phosphate, tech, 450 lb bbls. .....lb.	.07½	.08	.07½	.08	.07½	.08
Resinate, precip., bbls...lb.	.13	.14	.13	.14	...	...
Stearate, 100 lb. bbls....lb.	.17	.19	.17	.19	.12½	.18
Camphor, slabs .....lb.	.52	.53	.51	.59	.35½	.59
Powder .....lb.	.52	.53	.51	.59	.38	.59
Camwood, Bk, ground bbls..lb.	.16	.18	.16	.18	.16	.18
Candelilla Wax, bags.....lb.	.13¼	.14	.10¼	.14½	.09	.11
Carbitol, (See Diethylene Glycol Mono Ethyl Ether)..	...	...	...	...	...	...
Carbon, Decolorizing, drums c-l .....lb.	.08	.15	.08	.15	.08	.15
Black, 100-300 lb cases1c-1 NY .....lb.	.07	.08¼	.06½	.08¼	.06	.12
Bisulfide, 500 lb drs 1c-1 NY .....lb.	.05½	.06	.05½	.06	.05½	.06
Dioxide, Liq. 20-25 lb. cyl. .....lb.	...	.06	...	.06	...	.06
Tetrachloride, 1400 lb drs delivered .....lb.	.05¼	.06	.05¼	.06	.05¼	.07
Carnauba Wax						
No. 1 Yellow, bags.....lb.	.34½	.37	.30	.37	.20	.35
No. 2 N Country, bags..lb.	.27½	.28	.20	.28	.14	.20
No. 3 N. C.....lb.	.22	.24½	.16¼	.24¾	.11½	.17
Casein, Standard, Domestic ground .....lb.	.11½	.12	.11½	.13	.06½	.15
80-100 mesh c-l, bags....lb.	.13	.14	.12½	.14	...	...
Cellosolve (see Ethylene glycol mono ethyl ether)....						
Acetate (see Ethylene glycol mono ethyl ether acetate)						
Celluloid, Scraps, Ivory cs..lb.	...	.18	.13	.18	.13	.15
Transparent, cases .....lb.	...	.20	.16	.20	...	.16
Cellulose, Acetate, 50 lb kegs .....lb.	.55	.60	.55	.90	.80	.90
Chalk, dropped, 175 lb bbls.lb.	.03	.03¾	.03	.03¾	.03	.03¾
Precip, heavy, 560 lb cks.lb.	.03	.04	.03	.04	.02	.03½
Light, 250 lb casks.....lb.	.03	.04	.03	.04	.02½	.03½
Charcoal, Hardwood, lump, bulk wks .....bu.	...	.20	.18	.20	.18	.19
Willow, powd, 100 lb bbl. wks .....lb.	.06	.06¼	.06	.06¼	.06	.06¼
Wood, powd, 100 lb. bbls.lb.	.04	.05	.04	.05	.04	.05
Chestnut, clarified bbls wks.lb.	.01⅝	.01¾	.01⅝	.01¾	.01¼	.02
25% tks wks.....lb.	...	.01½	.01¼	.01½	.012	.01½
Pwd, 60%, 100 lb. bags wks. .....lb.	...	.04⅞	...	.04⅞	...	.04¾
Powd, decol. bgs wks...lb.	.05	.05¼	.05	.05¼	.04⅞	.05
China Clay, lp, blk mines.ton	8.00	9.00	8.00	9.00	8.00	9.00
Powdered, bbls.....lb.	.01	.02	.01	.02	.01	.02
Pulverized, bbls wks...ton	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, bulk..ton	15.00	25.00	15.00	25.00	15.00	25.00
Chlorine, cyls 1c-1 wks contract .....lb.	.07	.08½	.07	.08½	.07	.08½
cyls, cl., contract.....lb.	...	.05½†	...	.05½†	...	.05½
Liq tank cyls wks contract .....100 lb.	...	1.85	...	1.85	1.75	1.85
Multi c-l cyls. wks cont..lb.	2.00	2.25	2.00	2.25	...	...
Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.06	.07½	.06	.07½	.06	.07½
Chloroform, tech, 1000 lb drs .....lb.	.20	.21	.20	.21	.15	.20
USP, tins.....lb.	.30	.31	.30	.35	...	...
Chloropicrin; comml cyls.lb.	.85	.90	.85	1.25	.90	1.35
Chrome, Green, CP.....lb.	.20	.30	.20	.30	.28	.29
Commercial .....lb.	.06¼	.10	.06¼	.10	.06¼	.10
Yellow .....lb.	.15	.16	.15	.16	.14	.16
Chromium, Acetate, 8% Chrome bbls .....lb.	.05	.05¾	.05	.05¾	.04¾	.05¾
20° soln, 400 lb. bbls..lb.	...	.05½	...	.05½	...	.05½
Fluoride, powd, 400 lb. bbl. .....lb.	.27	.28	.27	28	.27	.28
Oxide, green, bbls.....lb.	.22	.23	.22	.23	.19	.23
Coal tar, bbls.....bbl.	8.50	9.00	8.50	9.00	8.50	9.00
Cobalt Acetate, bbls.....lb.	...	.60	.60	.80	...	...
Carbonate tech., bbls...lb.	1.35	1.40	1.34	1.40	...	...
Hydrate, bbls .....lb.	1.66	1.76	1.66	1.76	...	...
Linoleate, paste, bbls....lb.	...	.30	.30	.40	...	...
Resinate, fused, bbls....lb.	...	.12½	...	.12½	...	...
Precipitated, bbls .....lb.	...	.32	.32	.42	.41	.42

† Delivered.

Current

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Cobalt Oxide, black, bags..lb.	1.25	1.25	1.35	1.15	1.35
Cochineal, gray or bk. bg..lb.	.35	.40	.35	.42	.36 .42
Teneriffe silver, bags...lb.	.36	.40	.36	.43	.37 .43
Copper, metal, electrol 100 lb.	...	9.00	7.87½	9.00	5.00 9.00
Carbonate, 400 lb bbls..lb.	...	.08¼	...	.08¼	.07 .08
52-54% bbls.....lb.	.15½	.16¼	.15½	.16	.15¾ .17¼
Chloride, 250 lb bbls....lb.	.17	.18	.17	.18	.17 .18
Cyanide, 100 lb drs.....lb.	.37	.38	.37	.40	.39 .40
Oleate, precip., bbls.....lb.	...	.20	...	.20	... ...
Oxide, red, 100 lb bbls..lb.	.15	.17	.12½	.17	.14¾ .15
Resinate, precip., bbls..lb.	.18	.19	.18	.19	... ...
Stearate, precip., bbls...lb.	.35	.40	.35	.40	... ...
Sub-acetate verdigris, 400 lb. bbls.....lb.	.18	.19	.18	.19	.18 .19
Sulfate, bbls c-l wks. 100 lb.	...	3.85	3.75	3.85	3.00 3.75
Copperas, crys and sugar bulk c-l wks bags.....ton	14.00	14.50	14.00	14.50	14.00 14.50
Corn Syrup, 42 deg., bbls. ..... 100 lb.	...	2.59	3.04	3.59	2.61 3.04
43 deg., bbls.....100 lb.	...	3.64	3.09	3.64	2.66 3.09
Cotton, Soluble, wet, 100 lb. bbls. .....lb.	.40	.42	.40	.42	.40 .42
Cream Tartar, USP, powd., & gran., 300 lb. bbls..lb.	...	.18¼	.17½	.19½	.14½ .17¾
Creosote, USP., 42 lb cbys lb.	.45	.47	.45	.47	.40 .47
Oil, Grade 1 tanks...gal.	.11	.12	.11	.12	.11 .12
Grade 2.....gal.	.10	.12	.10	.12	.10 .12
Grade 3.....gal.	.09	.12	.09	.12	.09 .12
Cresol, USP. drums....lb.	...	.11	...	.11	.10½ .11
Crotonaldehyde, 98% 50 gal. dr. .....lb.*	.26	.30	.26	.30	.32 .36
Cudbear, English .....lb.	.19	.25	.19	.25	.16 .25
Cutch, Rangoon, 100 lb. bales .....lb.	...	.02¾	...	.02¾	.02½ .03
Borneo, Solid, 100 lb. bale .....lb.	...	.04½	...	.04½	.02½ .04½
Philippine, 100 lb bale .lb.	.03½	.04¾	.03½	.04¾	... ...
Cyanamid, bags c-l frt allowed Ammonia unit..	...	1.07½	...	1.07½	.97½ 1.07½
Dextrin, corn, 140 lb bags ..... 100 lb.	4.05	4.20	3.50	4.20	2.89 3.84
British Gum, bags..100 lb.	4.30	4.60	3.75	4.60	3.89 3.92
White, 140 lb. bags.100 lb.	4.00	4.20	3.47	4.20	2.94 3.79
Potato Yellow, 220 lb bgs .....lb.	.07¾	.08¾	.07¾	.08¾	.07¾ .09
White, 220 lb bags 1c-1 lb	.08	.09	.08	.09	.08 .09
Tapioca, 200 bags 1c-1.lb.	.06¾	.07¾	.06¾	.07¾	.06¾ .08
Diamylamine, drums, wks.lb.	...	1.00	...	1.00	... ...
Diamylene, drums, wks..lb.	.09	.10	.09	.10	... ...
tanks, wks .....lb.	...	.08½	...	.08½	... ...
Diamylether, wks., drums lb.	.60	.77	.60	.77	... ...
Diamylphthalate, drs wks.gal.	...	.20½	...	.20½	... ...
Diamyl Sulfide, drms, wks.lb.	...	1.10	...	1.10	... ...
Dianisidine, barrels .....lb.	2.35	2.45	2.35	2.45	2.35 2.70
Dibutylphthalate, wks ...lb.	.20½	.21	.20½	.21	.20½ .22
Dibutyltartrate, 50 gal drs lb.	.29½	.31½	.29½	.31½	.29½ .21
Dichlorethylene, drums...gal.	.29	...	.29	...	... ...
Dichloroethylether, 50 gal drs. .....lb.	...	.21	...	.21	.16 .21
Dichloromethane, drs wks.lb.	...	.15	...	.15	... ...
tanks, wks .....lb.	...	.02½	...	.02½	... ...
Dichloropentanes, drums, wks. .....lb.	.0278	.036	.0278	.036	... ...
tanks, wks.....lb.	...	.02½	...	.02½	... ...
Diethyamine, 400 lb drs ..lb.	2.75	3.00	2.75	3.00	2.75 3.00
Diethyl Carbinol, drums..lb.	.60	.75	.60	.75	... ...
Diethylcarbonate, com. drs lb.	...	.35	...	.35	... ...
90% grade, drs.....lb.	...	.25	...	.25	... ...
Diethylaniline, 850 lb drs lb.	.52	.55	.52	.55	.52 .55
Diethyleneglycol, drs ....lb.	.14	.16	.14	.16	.14 .16
Mono ethyl ether, drs.lb.	.15	.16	.15	.16	.15 .16
Mono butyl ether, drs.lb.	...	.26	...	.26	... .26
Diethylene oxide, 50 gal drs ..... lb.	.26	.27	.26	.27	.26 .27
Diethylorthotoluidin, drs..lb.	.64	.67	.64	.67	.64 .67
Diethyl phthalate, 1000 lb. drums .....lb.	.26	.27	.26	.27	.20 .26
Diethysulfate, technical, 50 gal drums .....lb.	...	...	...	...	... ...
Diglycol Oleate, bbls.....lb.	...	.18	.16	.18	... ...
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis .....lb.	...	1.20	...	1.20	... ...
Dimethylaniline, 340 lb drs lb.	.29	.30	.29	.30	.25 .28
Dimethyl Ethyl Carbinol, drs. .....lb.	.60	.75	.60	.75	... ...
Dimethyl phthalate drs...lb.	...	.24½	...	.24½	... ...
Dimethysulfate, 100 lb drs lb.	.45	.50	.45	.50	.45 .50
Dinitrobenzene, 400 lb bbls lb.	.17	.19½z	.17	.19½z	... .18
Dintrochlorobenzene, 400 lb bbls. .....lb.	.14	.15½	.14	.15½	.13 .15
Dinitronaphthalene, 350 lb bbls .....lb.	.34	.37	.34	.37	.34 .37
Dinitrophenol, 350 lb bbls lb.	.23	.24	.23	.24	.23 .24
Dinitrotoluene, 300 lb bbls lb.	...	.16½	.15½	.16½	.15 .17
Dioxan (See Diethylene Oxide)	...	...	...	...	... ...
Diphenyl .....lb.	.15	.25	.15	.25	.15 .40
Diphenylamine .....lb.	.33	.34	.31	.34	.31 .34
Diphenylguanidine, 100 lb bbl ..... lb.	.36	.37	.36	.37	.30 .37
Dip Oil, 25%, drums.....lb.	.23	.25	.23	.25	.23 .25
Divi Divi pods, bgs shipmt .....ton	36.00	40.00	35.00	40.00	26.00 36.00
Extract .....lb.	.05	.05½	.05	.05½	.05 .05½
Egg Yolk, 200 lb. cases..lb.	.44	.47	.40	.47	.40 .43
Epsom Salt, tech, 300 lb bbls c-l NY .....100 lb.	...	2.25	2.20	2.25	... 2.20
Ether, USP anaesthesia 55 lb drs .....lb.	.22	.23	.22	.24	.22 .24
(Conc) .....lb.	.09	.10	.09	.10	.09 .10

‡Higher price refined. xTanks 2c lower. zHigher price for purified.

The following

ORGANIC CHEMICALS

ARE AVAILABLE FOR SPOT OR CONTRACT SALE

MICHLER'S KETONE
MIXED-MONONITROCHLORO-BENZENES
MIXED-MONONITROTOLUENES
MIXED-MONONITROXYLENES
MIXED-TOLUIDINES
MIXED-XYLIDINES
MONOBENZYL PARA-AMINOPHENOL
MONOCHLOROBENZENE
MONOETHYLANILINE
MONOETHYL-ORTHO-TOLUIDINE
NEVILE & WINTHER'S ACID
NITROBENZENE
NITROBENZENE-META-SULFONIC ACID
NITRO FILTERS
OIL OF MIRBANE
ORTHO-AMINOPHENOL
ORTHO-ANISIDINE
ORTHO-DICHLOROBENZENE
ORTHO-NITROANISOLE
ORTHO-NITROCHLOROBENZENE
ORTHO-NITROPHENOL
ORTHO-NITROTOLUENE
ORTHO-TOLUIDINE
ORTHO-TOLUIDINE-META-SULFONIC ACID
PARA-AMINOBENZOIC ACID
PARA-AMINOPHENOL (BASE)
PARA-DICHLOROBENZENE
PARA-NITROANILINE-ORTHO-SULFONIC ACID
PARA-NITROBENZOIC ACID
PARA-NITROCHLOROBENZENE
PARA-NITROPHENOL
PARA-NITROTOLUENE
PARA-PHENETIDINE
PARA-TOLUIDINE
PERI ACID
PHENYL-ALPHA-NAPHTHYLAMINE
PHENYL-BETA-NAPHTHYLAMINE
PHENYL GAMMA ACID
PHENYL-METHYL-PYRAZOLENE
PHENYL PERI ACID
PICRAMIC ACID
PICRIC ACID
RESORCINOL, TECHNICAL
R SALT
S ACID
SCHAEFFER SALT
SODIUM METANILATE
SODIUM NAPHTHIONATE
SODIUM PARA-NITROPHENOLATE
SODIUM PICRAMATE
STABILIZERS
SULFANILIC ACID
SULFUR DIOXIDE
THIOCARBANILIDE
TOLIDINE (BASE)
TRIBUTYLAMINE

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E. I. DU PONT DE NEMOURS & COMPANY, INC.
Organic Chemicals Department
Wilmington, Delaware

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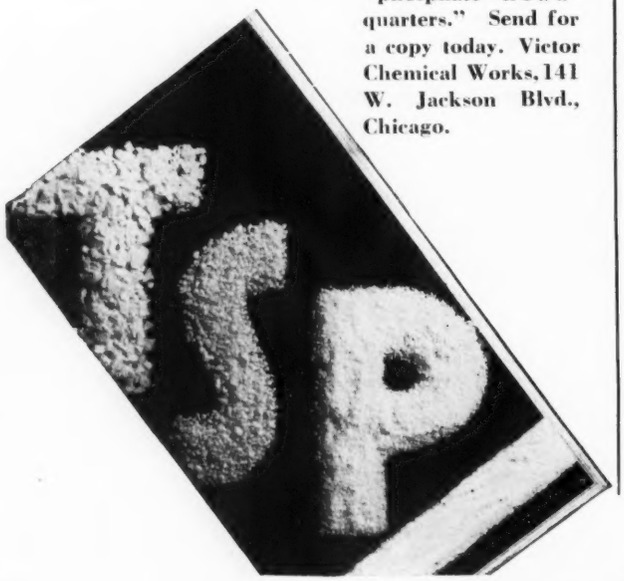
• WHAT

Are the Advantages

of Victor T.S.P. . . . in safety? . . . wetting power? . . . saponification of ordinary animal and vegetable oils? . . . emulsification of mineral oils? . . . as a "deflocculating" agent? . . . in ease of rinsing? . . . efficiency in lukewarm water? . . . in economy? . . . as a water-softener? You will find the answer to these and other important questions in this new booklet written at "phosphate headquarters." Send for a copy today. Victor Chemical Works, 141 W. Jackson Blvd., Chicago.



Ether, Isopropyl, Gum Copal Congo — Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Ether Isopropyl 50 gal. drums ..... lb.	.07‡x	.08	.07‡x	.08	.07	.08
Synthetic, wks, drums..lb.	.08	.09	.08	.09	...	...
Ethyl Acetate, 85% Ester tanks .....lb.	.07½	.08	.07½	.08	.07½	.09
drums .....lb.	.08½	.09	.08½	.09	.08½	.10
Anhydrous, tanks .....lb.	.09	.10	.09	.10	.09	.10
drums .....lb.	.10	.10¼	.10	.10¼	.10	.10¼
Acetoacetate, 50 gal drs lb.	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs lb.	.88	.90	.88	.90	.88	.90
Bromide, tech, drums..lb.	.50	.55	.50	.55	.50	.55
Chloride, 200 lb drums..lb.	.22	.24	.22	.24	.22	.24
Chlorocarbonate cbys...lb.	...	.30	...	.30	...	.30
Crotonate, drums.....lb.	1.00	1.25	1.00	1.25	...	...
Ether, Absolute, 50 gal drs .....lb.	.50	.52	.50	.52	.50	.52
Lactate, drums works..lb.	.25	.29	.25	.33	.25	.29
Methyl Ketone, 50 gal drs ..... lb.	.08½	.09	.08½	.09	...	.12½
Oxalate, drums works.lb.	.37½	55	.37½	.55	.37½	.55
Oxybutyrate, 50 gal drs wks .....lb.	.30	.30½	.30	.30½	.30	.30½
Ethylene Dibromide, 60 lb dr .....lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont.....lb.	.75	.85	.75	.85	.75	.85
Dichloride, 50 gal drums lb.	.06	.09	.05½	.09	.05	.09
Glycol, 50 gal drs wks lb.	.26	.28	.26	.28	.25	.28
Mono Butyl Ether drs wks	...	.20	...	.20	...	.20
Mono Ethyl Ether drs wk	.16	.17	.15	.17	.15	.17
Mono Ethyl Ether Acetate dr wks.....	17½	.18	.16½	.18	.16½	.18
Mono Methyl Ether, drs ..... lb.	.21	.23	.21	.23	.21	.23
Stearate	.18	.18	.18	.18	.18	.18
Oxide, cyl.....lb.	...	.75	...	.75	...	.75
Ethylidenaniline .....lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, bulk pottery...ton	...	14.50	...	14.50	14.00	16.50
Powdered, bulk works.ton	13.50	14.50	13.50	14.50	13.50	14.50
Ferric Chloride, tech, crystal 475 lb bbls.....lb.	.05	.07½	.05	.07½	.04½	.07½
Fish Scrap, dried, wks..unit	...	2.60*	2.25*	2.60*	1.85	2.75*
Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis .....unit	...	2.00‡	2.00‡	2.50‡	1.85‡	2.50‡
Fluorspar, 98%, bags.....28.00		35.50	28.00	35.50	28.00	35.50
Formaldehyde, aniline, 100 lb. drums .....lb.	.37½	.42	.37½	.42	.37½	.42
USP, 400 lb bbls wks.lb.	.06	.07	.06	.07	.06	.07
Fossil Flour .....lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, bulk, mines ..... ton	6.50	15.00	6.50	15.00	15.00	20.00
Imp. powd c-l bags...ton	24.00	30.00	23.00	30.00	24.00	30.00
Furfural (tech.) drums wks ..... lb.	.10§	.15	.10§	.15	.10	.15
Furfuramide (tech) 100 lb dr ..... lb.	...	.30	...	.30	...	.30
Furfuryl Acetate, 1 lb tins lb.	...	5.00	...	5.00	...	5.00
Fusel Oil, 10% impurities lb.	.16	.18	.16	.18	.14½	.18
Fustic, chips .....lb.	.04	.05	.04	.05	.04	.05
Crystals, 100 lb. boxes..lb.	.20	.23	.20	.23	.18	.23
Liquid 50°, 600 lb. bbls.lb.	.08½	.12	.08½	.12	.07	.10
Solid, 50 lb. boxes.....lb.	.16	.18	.16	.18	.14	.18
Sticks .....ton	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls.lb.	.42	.43	.42	.43	.42	.43
Gall Extract .....lb.	.18	.20	.18	.20	.18	.20
Gambier, com. 200 lb. cs...lb.	...	.05¾	.04	.05¾	.03	.07
Singapore cubes, 150 lb. bg. .....100 lb.	...	.06	.05	.07	.05¼	.08
Gelatin, tech, 100 lb cases.lb.	.50	.55	.45	.55	.45	.50
Glauber's Salt, tech, c-l wks. .....100 lb.	1.10	1.30	1.10	1.30	1.00	1.70
Glucose (grape sugar) dry 70-80° bags c-l NY.100 lb.	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb. bags .....100 lb.	...	2.33	...	2.33	...	2.33
Glue, bone, com. grades, c-l bags .....lb.	.08	.12½	.08	.12½	...	...
Better grades, c-l, bags.lb.	.12½	.16	.12½	.16	...	...
Casein, kegs .....lb.	.18	.22	.18	.22	...	...
Hide, high grd, c-l. bags.lb.	.23	.28	.23	.28	...	...
Med. grd, c-l, bags..lb.	.19	.23	.19	.23	...	...
Low grade, c-l, bags..lb.	.13½	.19	.13½	.19	...	...
Glycerin, CP, 550 lb drs..lb.	.13½	.14	.11	.14	.10¼	.11
Dynamite, 100 lb drs...lb.	.13	.13½	.10	.13½	.07½	.10¼
Saponification, tanks ...lb.	.09¾	.10	.06¾	.10⅛	.05	.08
Soap Lye, tanks .....lb.	.08¾	.09	.06¾	.09⅛	.04	.06½
Glyceryl Phthallate .....lb.	...	.28	...	.28	...	...
Glyceryl Stearate, bbls.....lb.	...	.18	...	.18	.17	.18
Glycol Phthallate .....lb.	...	.28	...	.28	...	...
Glycol Stearate .....lb.	...	.20	...	.20	...	...
Graphite,						
Crystalline, 500 lb bbls..lb.	.04	.05	.04	.05	.04	.05
Flake, 500 lb. bbls.....lb.	.08	.16	.08	.16	.08	.16
Amorphous, bbls. .....lb.	.03	.04	.03	.04	.03	.04
GUMS						
Gum Aloes, Barbadoes....lb.	.87	.90	.85	.90	.85	.90
Animi (Zanzibar) bean & pea, 250 lb. cases.....lb.	.35	.40	.35	.40	.35	.40
Glassy, 250 lb cases.....lb.	.50	.55	.50	.55	.50	.55
Arabic, amber sorts.....lb.	.09⅜	.10	.07¾	.10⅝	.05¾	.08¼
Asphaltum, Barbadoes (Manjak) 200 lb bags.....lb.	.03	.04	.03	.06	.03	.05
Egyptian, 200 lb cases..lb.	.12	.15	.12	.15	.13	.15
Benzoin Sumatra, U.S.P. 120 lb. cases .....lb.	.20	.21	.20	.23	.17	.23
Copal Congo, 112 lb. bags, clean, opaque† .....lb.	.24⅛	.24⅝	.24⅛	.28	.16½	.28
Dark, amber† .....lb.	.08¾	.09¼	.08⅝	.10½	.06	.10½
Light, amber† .....lb.	.14⅝	.14⅞	.14⅜	.19	.08	.19

† Carlot (min. 30,000 lbs.) prices apply to assorted lots as well as carlot quantities of a single grade.

* & 10; ‡ & 50. § Tanks, lc lower.

Current — Gum Copal Congo Linseed Cake

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Copal Congo water, white† lb.	.41⅝	.42⅛	.41⅝	.48	.37	.48
Damar Batavia standard 136, lb. cases† ..... lb.	.13¼	.13¾	.12⅞	.13¾	.08½	.15½
Batavia Dust, 160 lb bags† .lb.	.05¾	.06¼	.05¾	.07	.04	.07½
E Seeds, 136 lb cases† .. lb.	.07½	.08	.07½	.09½	.05½	.09½
F Splinters, 136 lb cases and bags ..... lb.	.06⅛	.06⅝	.05½	.06⅝	.05½	.06
Singapore,						
No. 1, 224 lb cases† .... lb.	.15½	.16	.15½	.18	.09½	.18
No. 2, 224 lb cases† .... lb.	.09⅜	.09⅞	.09⅜	.11	.07	.11½
No. 3, 180 lb bags† .... lb.	.05½	.06	.05⅛	.07	.04½	.07½
Gum Ester, light ..... lb.	.06¾	.07½	.06	.07½	...	...
Copal Manila 180-190 lb. baskets						
Loba A† .... lb.	.11⅜	.11⅞	.11⅜	.14½	.09	.13½
Loba B† ..... lb.	.10¼	.10¾	.10¼	.13½	.08	.13
Loba C† ..... lb.	.09¾	.10¼	.09¾	.12	.07	.12
M A Sorts† ..... lb.	.07	.07¼	.06½	.07½	.05	.07
D B B Chips† ..... lb.	.08	.08½	.08	.09½	.05¾	.09½
Copal East Indies chips, 180 lb. bags† ..... lb.	.04	.04½	.04	.05	.04	.07
Pale bold, 224 lb cs† .. lb.	...	.17	.16	.17	.05½	.17
Pale nubs, 180 lb bags† .lb.	.10½	.10¾	.10½	.13	.05	.13
Copal Pontianak, 224 lb cases						
Bold gen No. 1† .... lb.	.17⅝	.18½	.17½	.19	.14	.18½
Gen. chips spot† ..... lb.	.07⅝	.08⅛	.07¼	.08¼	.05	.08
Elemi, No. 1, 80-85 lb cs.. lb.	.09⅛	.09⅝	.09¾	.11½	.09	.12½
No. 2, 80-85 lb cases.. lb.	.09¼	.09½	.09¼	.11¼	.08½	.12
No. 3, 80-85 lb cases.. lb.	.08	.08½	.08	.08½	.08	.08½
Gamboge, pipe, cases..... lb.	.60	.65	.57	.65	.42	.65
Powdered, bbls ..... lb.	.70	.75	.67	.75	.50	.70
Ghatti, sol. bags..... lb.	.09	.09½	.09	.09½	.06	.09½
Karaya, pow. bbls xxx.... lb.	.23	.25	.23	.25	...	...
xx ..... lb.	.15	.16	.15	.16	...	...
No. 1 ..... lb.	.08	.09	.08	.11	...	...
No. 2 ..... lb.	.07	.08	.07	.09	...	...
Kauri, 224-226 lb cs No. 1† lb.	.19	.19½	.19	.25	.20	.25
No. 2 fair pale† ..... lb.	.14½	.15	.12½	.16	.12½	.16
Brown Chips, 224-226 lb. cases† ..... lb.	.06½	.08½	.06½	.08½	.06½	.12
Bush Chips, 224-226 lb. cases† ..... lb.	.22	.22½	.22	.24	.22	.24
Pale Chips, 224-226 lb. cases† ..... lb.	.11½	.14	.11	.14	.11	.14
Kino, tins ..... lb.	.75	.80	.75	.80	...	...
Mastic† ..... lb.	.55	.55½	.35	.55½	.26⅞	.40
Sandarac, prime quality, 200 lb bags & 300 lb casks. lb.	.48	.48½	.44	.50	.21	.50
Senegal, picked bags..... lb.	.20	.21	.17	.21	...	...
Sorts ..... lb.	.09⅜	.10	.08	.10	...	...
Thus, bbls. .....280 lbs.	...	10.50	9.50	10.50	...	...
Strained .....280 lbs.	...	10.75	9.50	10.75	...	...
Tragacanth. No. 1 bags.... lb.	1.15	1.20	1.00	1.20	.65	1.00
Yacca, bags ..... lb.	.03¼	.03¾	.03¼	.04	...	...
Hematine crystals, 400 lb bbls. ..... lb.	.16	.18	.16	.18	.10	.18
Paste, 500 bbls..... lb.	...	.11	...	.11	...	.11
Hemlock 25%, 600 lb. bbls. wks. ..... lb.	.03½	.04½	.03½	.04½	.03½	.04½
Bark ..... ton	...	16.00	...	16.00	...	16.00
Hexalene, 50 gal drs wks.. lb.	...	.30	...	.30	...	.30
Hexane, normal 60-70°C. Group 3, tanks..... gal.	...	.14	...	.14	...	...
Hexamethylenetetramine, drums ..... lb.	.37	.39	.37	.39	...	...
Hoof Meal, fob Chicago. unit	...	2.00	1.85	2.60	.75	1.75
South Amer. to arrive. unit	...	1.85	1.65	1.80	1.40	1.75
Hydrogen Peroxide, 100 vol, 140 lb cbys..... lb.	.20	.21	.20	.21	.20	.21
Hydroxyamine Hydrochloride ..... lb.	...	3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls. lb.	.17	.20	.17	.20	.11	.20
Indigo Madras, bbls..... lb.	1.25	1.30	1.25	1.30	1.25	1.30
20% paste, drums..... lb.	.15	.18	.15	.18	.15	.18
Synthetic, liquid ..... lb.	...	.12	...	.12	...	.12
Iodine, crude .....per kilo	...	15s 1d	...	15s 1d	...	...
Resublimed, kegs ..... lb.	...	1.90	1.90	2.30	2.10	3.40
Irish Moss, ord. bales.... lb.	.07	.08	.07	.08	...	...
Bleached, prime, bales.. lb.	.14	.15	.14	.15	...	...
Iron Acetate Liq. 17°, bbls. lb.‡	.03	.04	.03	.04	...	...
Iron Chloride see Ferric or Ferrous						
Nitrate, kegs ..... lb.	.09	.10	.09	.10	.09	.10
Comd, bbls. .....100 lb.	2.75	3.25	2.75	3.25	2.50	3.25
Oxide, English..... lb.	.08¾	.09	.08¾	.09	.04	.07
Isobutyl Carbinol (128-132°C) drums, wks..... lb.	...	.329	.34	.329	...	.34
tanks, whks, lb..... lb.	...	.326	...	.326	...	...
Isopropyl Acetate, tanks... lb.	...	.07½	.07	.07½	...	...
Japan Wax, 224 lb cases.. lb.	.06¾	.07	.06	.08	.05½	.08
Keiselguhr, 95 lb. bgs. N.Y. Brown .....ton	60.00	70.00	60.00	70.00	60.00	70.00
Lead Acetate, bbls wks. 100 lb.	...	9.50	...	9.50	8.50	9.50
White crystals, 500 lb bbls wks .....100 lb.	...	10.50	...	10.50	9.50	10.50
Arsenate, drs cl-lcl. wks. lb.	.09	.10½	.07	.18	.09	.10½
Linoleate, solid bbls..... lb.	.26	.26½	.26	.26½	...	...
Metal, c-l NY .....100 lb.	...	3.75	3.75	4.25	3.00	4.50
Nitrate, 500 lb bbls wks. lb.	.10	.14	.10	.14	.10	.14
Oleate, bbls. ..... lb.	.15	.16	.15	.16	.15	.16
Lead Oxide Litharge, 500 lb. bbls. ..... lb.	.052	.06¼	.052	.06¾	.05½	.07
Red, 500 lb bbls wks.. lb.	.062	.067	.062	.07¾	.06½	.08
Resinate, precip., bbls.. lb.	...	.14	.14	18½	...	...
Stearate, bbls ..... lb.	.22	.23	.22	.23	...	...
White, 500lb bbls wks. lb.	.06½	.07	.06½	.07	.06	.07
Sulfate, 500lb bbls wks. lb.	...	.06	...	.06	.05½	.06
Lime, ground stone bags. ton	...	9.25	4.50	9.25	...	4.50
Lime Salts, see Calcium Salts						
Lime-Sulfur soln bbls.... gal.	.14	.33	.14	.33	.15	.17
Linseed cake, bags..... ton	...	33.00	21.50	33.00	...	...

‡Higher price for lcl quantities.

† Carlot (min. 30,000 lbs.) prices apply to assorted lots as well as carlot quantities of a single grade.

Recent CHEMICAL Developments

IX

1. NEW LOW-PRICED THINNER

Parathinner is a water-white, liquid mixture of paramenthane (a saturated terpene) with dipentene, menthene, and similar terpene hydrocarbons. It has a Kauri Butanol value of about 55. In distillation and evaporation range it is intermediate between turpentine and dipentene. It is a good thinner for paint and varnish products, blends in all proportions with other commonly used thinners, and sells at a low price.

2. FOR SYNTHETIC CAMPHOR

A pure alpha-pinene is derived from steam-distilled wood turpentine for use in making synthetic camphor.

3. WATERPROOF PORTLAND CEMENT

A limed wood rosin has recently been developed especially for waterproofing Portland Cements and its use for this purpose is increasing.

4. HIGH GLOSS CARTONS

High gloss cartons, that do not soil easily, are being made with nitrocellulose lacquer.

5. PUBLIC UTILITIES PAINT

Tornesit, the new chlorinated rubber paint, offers valuable protection to gas holders, purifiers, oil tanks, sub-stations, towers, and steel poles. It is economical and stands up well under the severest conditions.

6. PROTECTS BUILDING MATERIALS

Window frames, plumbing fixtures, tiles, grille work, and other articles liable to soilure from plaster and cement during installation can be protected from this with nitrocellulose lacquer.

7. ESSENTIAL OILS

From pine oil are produced terpene hydrate, liquid terpineol, fenchyl alcohol, borneol, anethol, and synthetic terpineol. All these materials are used by manufacturers of essential oils.

8. COLORED RUBBER

There is a nitrocellulose lacquer flexible and elastic enough for application to rubber. It comes in any color, adds gloss, and protects against moisture and acids.

More detailed information on any of the above subjects may be secured by filling in this coupon.

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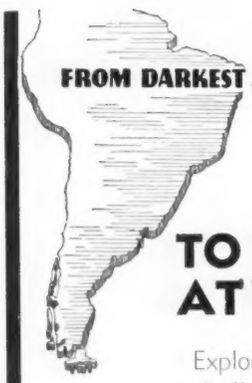

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WASHINGTON, D. C.
H. P. Somerville, Managing Director

Linseed Meal Orange-Mineral — Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Linseed Meal, bags.....ton	...	41.00	30.50	41.00	28.00	37.00
Lithopone, 400 lb bbls lc-l wks .....lb.	.04¾	.05	.04¾	.05	.04¾	.05
Logwood, 51°, 600 lb bbls.lb.	.08½	.12½	.08½	.12½	.05	.12½
Solid, 50 lb boxes.....lb.	.14½	.17½	.14½	17½	.08	.17½
Sticks .....ton	24.00	26.00	24.00	26.00	24.00	26.00
Madder, Dutch .....lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl.ton	60.00	65.00	55.00	65.00	46.00	65.00
Magnesium Carb, tech, 70 lb. bags NY .....lb.	...	.06½	...	.06½	.05¾	.06½
Chloride flake, 375 lb drs c-l wks .....ton	36.00	39.00	34.00	39.00	34.00	36.00
Imported shipment ...ton	31.75	33.00	31.75	33.00	31.75	33.00
Fused, imp., 900 lb bbls NY ..... ton	...	31.00	...	31.00	...	31.00
Magnesium Fluosilicate, crys, 400 lb bbls, wks.....lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb. bbls .....lb.	...	.42	...	.42	...	.42
Heavy, 250 lb bbls....lb.	...	.50	...	.50	...	.50
Palmitate, bbls. .....lb.	.22	.23	.21	.23	...	...
Stearate, bbls. .....lb.	.19	.22	...	...	...	...
Linoleate, lig. drums....lb.	.18	.19	.18	.19	...	...
Resinate, fused, bbls....lb.	.08¾	.08½	.08¾	.08½	...	...
precip., bbls. .....lb.	...	.12	.11½	.12½	...	...
Sulfate, Anhyd., 550 lb drs N Y .....lb.	.09	.09½	.08	.09½	.07	.08
Manganese Borate, 30%, 200 lb. bbls. .....lb.	.15	.16	.15	.16	.15	.16
Chloride, 600 lb casks..lb.	.07	.08	.07	.08	.07	.08
Dioxide, tech (peroxide) drs ..... lb.	.03¾	.06	.03¾	.06	.03½	.06
Mangrove 55%,400 lb bbls.lb.	...	.04	...	.04	...	.04
Bark, African .....ton	26.00	27.00	26.00	31.00	22.00	31.00
Marble Flour, bulk.....ton	12.00	13.00	12.00	13.00	12.00	13.00
Mercuric chloride .....lb.	.88	.93	.82	.93	.67	.87
Mercury metal ....76 lb. flask	74.50	77.00	66.50	79.00	48.00	69.00
Meta-nitro-aniline .....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-para-oluidine 200 lb. bbls .....lb.	1.40	1.55	1.40	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb bbls .....lb.	.80	.84	.80	.84	.80	.84
Peroxide, 100 lb cs.....lb.	1.20	1.25	1.20	1.25	1.00	1.25
Silicofluoride, bbls .....lb.	.09	.10	.09	.11	.08¾	11.
Stearate, bbls .....lb.	.19	.20	.19	.20	.16½	.20
Meta-toluene-diamine, 300 lb. bbls .....lb.	.67	.69	.67	.69	.67	.69
Methanol (Wood Alcohol)						
*Crude, tanks .....gal.	...	.25	...	.25	.20	.20
95% tanks .....gal.	.33	.35	.33	.35	.33	.35
97% tanks .....gal.	.34	.39	.34	.39	.34	.39
*Pure, Synthetic drs cars.gal.	...	.40	...	.40	.37½	.40
*Synthetic, tanks .....gal.	...	.35½	...	.35½	...	.35½
*Denat. grade, tanks....gal.	...	.43	.40	.43	.35	.40
Methyl Acetate drs 82%.gal.	.12	.13	.12	.13	.12	.13
99% tanks .....gal.	...	.15	...	.15	...	.15
Acetone, drums .....gal.	.53½	.56	.53½	.57	.42	.57
Hexyl Ketone, pure...lb.	...	1.20	...	1.20	...	1.20
Anthrapuinone .....lb.	.65	.67	.65	.67	.65	.67
Butyl Ketone, tanks....lb.	...	.10½	.10½	.10½	...	...
Cellosolve (See Ethylene Glycol Mono Methyl Ether)						
Chloride, 90 lb cyl.....lb.	.45	.45	.45	.45	.45	.45
Ethyl Ketone, tanks.....lb.	...	.07½	.07½	.07½	...	...
Propyl carbinol, drums..lb.	.60	.75	.60	.75	...	...
Mica, dry grd. bags wks..lb.	65.00	80.00	65.00	80.00	65.00	80.00
Michler's Ketone, kegs....lb.	...	2.50	...	2.50	2.50	3.00
Molasses, blackstrap, tanks f.o.b. N. Y. .....gal.	.06	.06¼	.06	.09	.04½	.07
Monoamylamine, drs, wks.lb.	...	1.00	...	1.00	...	...
Monochlorobenzene, drums, see Chlorobenzene, mono.						
Monomethylparaminosulfate, 100 lb drums.....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Montan Wax, crude, bags.lb.	.10½	.11	.10	.11	.03¾	.10
Myrobalans 20%, liq bbls..lb.	.03¾	.04¼	.03¾	.04¼	.03¼	.04¼
50% Solid, 50 lb boxes.lb.	.06	.06¾	.06	.06¼	.05	.06¼
J1 bags .....ton	...	25.00	25.00	32.00	27.00	35.00
J2 bags .....ton	...	16.00	16.00	18.00	15.00	22.00
R2 bags .....ton	16.00	16.50	16.25	18.00	15.00	22.00
Naphtha. v.m. & p. (deodorized) tanks, Group 3 tanks .....gal.	...	.06⅞	.06¼	.07¼	...	...
Bayonne, tanks.....lb.	...	.09½	...	.09½	.08½	.09½
Naphthalene balls, 250 lb bbls wks. .....lb.	.06	.07	.06	.07	.05½	.07
Crude, imp .....100 lb.	1.15	1.90	1.75	2.15	1.75	2.15
Crushed, chip. bgs wks..lb.	...	.05	...	.05	...	.05
Flakes, 175 lb bbls wks.lb.	...	.07¼	...	.07¼	...	.07¼
Nickel Chloride, bbls.....lb.	.18	.19	.18	.19	.17	.19
Oxide, 100 lb kegs NY..lb.	.35	.37	.35	.37	.35	.37
Salt bbl 400 bbls lb NY.lb.	.11½	.12	.11½	.12	.11	.13
Single, 400 lb bbls NY.lb.	.11½	.12	.11½	.12	.11	.12
Metal ingot.....lb.	.35	.35	.35	.35	.35	.35
Nicotine, free 40%, 8 lb tins, cases	8.25	10.15	8.25	10.15	...	...
Sulfate, 55 lb. drums...lb.	.67	.75	.67	.75	.67	.75
Nitre Cake, blk.....ton	12.00	14.00	12.00	14.00	10.00	14.00
Nitrobenzene, redistilled, 1000 lb. drs wks‡.....lb.	.08½	.11	.08½	.11	.08½	.11
Nitrocellulose, c-l-l-cl, wks.lb.	.27	.33	.27	.33	.27	.33
Nitrogenous Mat'l., bulk.unit	...	2.50	2.35	3.25	1.50	3.50
Nitronaphthalene, 550 lb bbls. .....lb.	.24	.25	.24	.25	.24	.25
Nutgalls Aleppy, bags....lb.	...	.18	...	.18	...	.18
Chinese. bags.....lb.	.17	.18	.17	.18	.17	.18
Oak Bark, ground.....ton	30.00	35.00	30.00	35.00	30.00	35.00
Whole .....ton	20.00	23.00	20.00	23.00	20.00	23.00
Extract, 25% tan., bbls..lb.	.03⅜	.03½	.03⅜	.03½	...	...
Orange-Mineral, 1100 lb casks NY ..... lb.	.09¼	.10	.09¼	.10½	.09½	.10¾

* Delivered basis (east of Miss. River).
‡ Higher price is for lcl quantities.

Current

Orthoaminophenol Phosphorous Oxychloride

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Orthoaminophenol, 50 lb kgs. ....lb.	2.15	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs.lb.	1.00	1.00	1.15	1.00	1.15
Orthochlorophenol, drums.lb.	.50	.50	.65	.50	.65
Orthocresol, drums.....lb.	.13	.13	.15	.13	.15
Orthodichlorobenzene, 1000 lb. drums .....lb.	.05½	.05½	.06	.05½	.06
Orthonitrochlorobenzene, 1200 lb drs wks.....lb.	.28	.28	.29	.28	.29
Orthonitrotoluene, 1000 lb drs wk .....lb.	.05½	.05½	.06	.05½	.06
Orthonitrophenol, 350 lb dr. ....lb.	.52	.52	.80	.52	.90
Orthotoluidine, 350 lb bbl l-c-l .....lb.	.14	.14	.15	.14	.22
Orthonitroparachlorphenol, tins .....lb.	.70	.70	.75	.70	.75
Osage Orange, crystals...lb.	.16	.16	.17	.16	.17
51 deg. liquid.....lb.	.07	.07	.07¾	.06	.07¾
Powdered, 100 lb bags..lb.	.14½	.14½	.15	.14½	.15
Paraffin, refd, 200 lb cs slabs 123-127 deg. M. P.....lb.	.047	.04½	.04¾	.02	.04½
128-132 deg. M. P.....lb.	.0505	.0515	.04¾	.0515	.03⅛ .04¾
133-137 deg. M. P.....lb.	.0575	.07	.05	.07	.043 .05¾
Para Aldehyde, 110-55 gal. drs. .....lb.*	.16	.18	.16	.18	.16 .18
Aminoacetanilid, 100 lb. bg. .....lb.	.52	.60	.52	.60	.52 .60
Aminohydrochloride, 100 lb. kegs .....lb.	1.25	1.30	1.25	1.30	1.25 1.30
Aminophenol, 100 lb kgs.lb.	.78	.80	.78	.80	.78 .80
Chlorophenol, drums....lb.	.50	.65	.50	.65	.50 .65
Coumarone, 330 lb drs..lb.	...	...	...	...	... ...
Cymene, refd, 110 gal dr. ....gal.	2.25	2.50	2.25	2.50	2.25 2.50
Dichlorobenzene, 150 lb bbls wks.....lb.	.16	.20	.16	.20	.15 .18
Nitroacetanilid, 300 lb. bbls .....lb.	.45	.52	.45	.52	.45 .52
Nitroaniline, 300 lb bbls wks .....lb.	.48	.55	.48	.55	.48 .55
Nitrochlorobenzene, 1200 lb. drs. wks.....lb.	.23½	.24	.23½	.24	.23½ .26
Nitro-orthotoluidine, 300 lb. bbls .....lb.	2.75	2.85	2.75	2.85	2.75 2.85
Nitrophenol 185 lb bbls.lb.	.45	.50	.45	.50	.45 .50
Nitrosodimethylaniline, 120 120 lb. bbls.....lb.	.92	.94	.92	.94	.92 .94
Nitrotoluene, 350 lb bbls.lb.	.35	.37	.35	.37	.29 .37
Phenylenedamine, 350 lb bbls. .....lb.	1.25	1.30	1.25	1.30	1.15 1.30
Para Tertiary amyl phenol wks, drums .....lb.	...	.50	...	.50	... ...
Toluenesulfonamide, 175 lb bbls. .....lb.	.70	.75	.70	.75	.70 .75
Toluenesulfonchloride, 410 lb bbls wks.....lb.	.20	.22	.20	.22	.20 .22
Toluidine, 350 lb bbls wk .....lb.	.56	.60	.56	.60	.56 .60
Paris Green, Arsenic Basis 100 lb kegs.....lb.	...	.23	...	.23	... .24
250 lb kegs.....lb.	...	.22	...	.22	... .23
Perchlorethylene, 50 gal dr.lb.	...	.15	...	.15	... ...
Persian Berry Ext, bbls..lb.	.25	Nom.	.25	Nom.	.25 Nom.
Pentane, normal, 28-38° C, group 3, tanks.....gal.	...	.09	...	.09	... ...
Pentasol (see Alcohol, Amyl)					
Pentasol Acetate (see Amyl Acetate)					
Petrolatum, Green, 300 lb. bbl. .....lb.	.01⅞	.02	.01⅞	.02	.01⅞ .02
Petroleum Ethers, tks. 30-60°, Group 3.....gal.	...	.13	.11	.13	.10 .11
Petroleum solvents and diluents					
Cleaners' naphtha, Group 3. tanks .....gal.	...	.06⅞	.06¼	.07⅜	.05 .07¾
Lacquer diluents, Bayonne, tanks .....gal.	.12	.12½	.12	.12½	.12 .12¾
Group 3, tanks....gal.	.07⅞	.08	.06⅞	.08⅜	.06¼ .08⅜
Petroleum thinner 47-49° tanks, Group 3.....gal.	...	.05⅞	.05⅞	.06⅜	... ...
Rubber solvent, stand. grade tanks, Group 3.gal.	...	.06⅞	.06⅜	.06⅞	.05 .06⅞
East Coast tanks....gal.	...	.09½	...	.09½	.09 .09½
Stoddard solvents 48-50 deg. tanks, Group 3.....gal.	...	.06⅜	.05¾	.07⅛	.04½ .06⅝
East Coast tanks....gal.	...	.09½	...	.09½	.09 .09½
Phenol, 250-100 lb drums.lb.	.14¼	.15	.14¼	.15	.14¼ .15
Phenyl-Alpha-Naphthylamine, 100 lb kegs.....lb.	...	1.35	...	1.35	... 1.35
Phenyl Chloride, drums..lb.	...	.16	...	.16	... ...
Phenylhydrazine Hydrochloride .....lb.	2.90	3.00	2.90	3.00	2.90 3.00
Phosphate Acid (see Superphosphate)					
Phosphate Rock, f.o.b. mines Florida Pebble, 68% basis .....ton	...	3.25	2.85	3.25	2.75 3.25
70% basis .....ton	...	3.75	3.35	3.75	3.25 3.90
72% basis .....ton	...	4.25	3.85	4.25	3.75 4.35
75-74% basis .....ton	...	5.25	4.90	5.30	4.75 5.50
75% basis .....ton	...	5.35	5.05	5.40	4.85 5.75
77-80% basis .....ton	...	6.25	5.90	6.25	5.75 6.30
Tennessee, 72% basis..ton	...	4.75	4.75	5.00	... 5.00
Phosphorous Oxychloride 175 lb. cyl.....lb.	.16	.20	.16	.20	.16 .23
Red, 110 lb cases.....lb.	.44	.45	.44	.45	.40 .45
Yellow, 110 lb cs wks.lb.	.28	.33	.28	.33	.27½ .33

* Higher price is for lcl quantities.

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Phosphorous Oxychloride
Satin, White

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Phosphorous Sesquisulfide, 100 lb cs .....lb.	.38	.38	.44	.38	.44
Trichloride, cylinders...lb.	.16	.16	.20	.16	.23
Phthalic Anhydride, 100 lb wks .....lb.	.14½	.14½	.15	.13½	.16
Pigments Metallic, Red or or brown bags, bbls, Pa. wks .....ton	37.00	37.00	45.00	37.00	45.00
Pine Oil, 55 gal drs or bbls. Destructive dist.....lb.	.59	.59	.62	.59	.62
Steam dist. wat. wh. bbls. .....gal.	.64	.64	.65	...	...
Prime bbls.....bbl.	8.00	8.00	10.60	8.00	10.60
Pitch Hardwood, wks....ton	...	...	20.00	20.00	25.00
Plaster Paris, tech, 250 lb. bbls. .....bbl.	3.40	3.40	3.50	3.30	3.50
Platinum, Refined .....oz.	35.00	35.00	38.00	24.00	38.00
Pontol, tanks .....per gal.	...	...	.54	...	.54
Potash, Caustic, wks, sol. lb.	.07⅛	.07⅛	.07⅛	.06⅛	.07⅜
flake .....lb.	.0803	.0803	.08¼	.0705	.08¼
Liquid tanks .....lb.	...	...	.03⅝	...	...
Potash Salts, Rough Kainit 14% basis† .....ton	...	...	9.70	...	9.70
Manure Salts, imported 20% basis bulk.....ton	...	8.60	12.00	...	12.00
30% basis bulk.....ton	...	12.90	19.15	...	19.15
Domestic, cif ports, blk. unit	...	.43	...	...	...
Potassium Acetate.....lb.	.27	.27	.28	.27	.28
Potassium Muriate, 80% basis bags .....ton	...	22.00	37.15	...	37.15
Domestic, bulk .....unit	...	.40	...	...	...
Pot. & Mag. Sulfate, 48% basis bags .....ton	...	22.50	25.00	25.00	27.80
Potassium Sulfate, 90% basis bags .....ton	...	35.00	42.15	42.15	47.50
Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.07½	.07½	.09	.07½	.09
Bichromate Crystals, 725 lb casks .....lb.	.08⅛	.08⅛	.08⅝	.07¼	.08⅝
Binoxalate, 300 lb bbls. lb.	.22	.14	.23	.14	.17
Bisulfate, 100 lb kegs..lb.	.16	.16	.30	.16	.30
Carbonate, 80-85% calc 800 lb casks.....lb.	.07	.07	.07½	.04⅞	.07½
Chlorate crystals, powd. 112 lb keg wks.....lb.	...	.08½	.09	.08	.09
Chloride, crys. bbls.....lb.	.04	.04	.04¾	.04	.04¾
Chromate, kegs.....lb.	.23	.23	.28	.23	.28
Cyanide, 110 lb. cases..lb.	.55	.55	.60	.50	.60
Iodide, 75 lb. bbls.....lb.	...	1.40	2.70	2.35	2.70
Metabisulfite, 300 lb bbl. lb.	.10½	.10	.11	.10½	.11
Oxalate, bbls.....lb.	.16	.16	.24	.16	.24
Perchlorate, cask wks...lb.	.09	.09	.11	.09	.11
Permanganate, USP, crys. 500 & 1000 lb drs wks lb.	.18½	.18½	.19½	.17½	.19½
Prussiate, red, 112 lb kg. lb.	.39	.35	.39	.39	.41
Yellow, 500 lb casks..lb.	.18	.18	.19	.16½	.19
Tartrate Neut, 100 lb kg. lb.	...	...	.21	...	.21
Titanium Oxalate, 200 lb bbls. .....lb.	.32	.32	.35	...	...
Propane, group 3, tanks.....	...	...	.07	...	.07
Pumice Stone, lump bags. lb.	.04½	.04½	.06	.04	06
250 lb bbls.....lb.	.05	.05	.07	.04½	.07
Powdered, 350 lb bags..lb.	.02½	.02½	.03	.02½	.03
Putty, comml., tubs...100 lb.	...	2.25	...	2.25	2.00	2.25
Linseed Oil, kegs...100 lb.	4.00	4.00	4.50	3.40	4.50
Pyridine, 50 gal drums...gal.	...	1.25	...	1.25	.85	1.25
Pyrites, Spanish cif Atlantic ports bulk.....unit	.12	.12	.13	.12	.13
Quebracho, 35% liq. tks...lb.	...	.02⅜	.02¼	.02⅜	.02	.02⅜
450 lb bbls c-l.....lb.	...	.02⅞	.02¾	.02⅞	.02⅜	.02⅞
Solid, 63%, 100 lb bales cif .....lb.	...	.02⅞	.02⅞	.03⅜	.02⅜	.03⅜
Clarified, 64%, bales..lb.	...	.03	.03	.03½	.02⅜	.03½
Quercitron, 51 deg liquid 450 lb. bbls.....lb.	.06	.06½	.05½	.06½	.05½	.06
Solid, 100 lb boxes.....lb.	.10	.12	.09½	.13	.09½	.13
Bark, Rough.....ton	...	14.00	...	14.00	...	14.00
Ground .....ton	34.00	35.00	34.00	35.00	34.00	35.00
R Salt, 250 lb bbls wks...lb.	.40	.44	.40	.44	.40	.44
Red Sanders Wood, grd bbls. .....lb.	...	.18	...	.18	...	.18
Resorcinol Tech, cans.....lb.	.75	.80	.65	.80	.65	.70
Rochelle Salt, cryst.....lb.	.14½	.15	.12½	.16	...	...
Rosin Oil, 50 gal bbls, first run .....gal.	...	.48	.45	.48	.42	.46
Second run.....gal.	...	.53	.50	.53	.46	.51
FF Wood Rosin, c.l. NY..	...	5.15	5.15	6.13	...	...
Rosins 600 lb bbls 280 lb..unit ex. yard N. Y.						
B	...	5.35	4.50	5.75	2.75	5.15
D	...	5.40	4.60	5.85	2.95	5.15
E	...	5.50	4.80	6.50	3.55	5.15
F	...	5.57½	5.00	6.75	3.85	5.17½
G	...	5.57½	5.05	6.75	3.90	5.17½
H	...	5.60	5.10	6.75	4.00	5.17½
I	...	5.65	5.15	6.75	4.05	5.20
K	...	5.70	5.30	6.75	4.60	5.20
M	...	5.75	5.45	6.80	4.35	5.25
N	...	5.90	5.50	6.80	4.75	5.40
WG	...	6.10	5.70	6.80	4.80	5.60
WW	...	6.35	5.90	6.85	4.85	6.20
Rotten Stone, bags mines. ton	23.50	24.00	23.50	24.00	23.50	24.00
Lump, imported, bbls...lb.	.05	.05	.07	.05	.05	.07
Selected bbls.....lb.	.09	.09	.12	.09	.09	.12
Powdered, bbls.....lb.	.02½	.02½	.05	.02½	.02	.05
Sago Flour, 150 lb bags..lb.	.02½	.02½	.03	.02½	.02½	.03
Sal Soda, bbls wks...100 lb.	1.10	1.10	1.10	1.10	.90	1.10
Salt Cake, 94-96% c-l wks. ton	13.00	13.00	18.00	13.00	13.00	18.00
Chrome .....ton	12.00	13.00	12.00	13.00	12.00	13.00
Saltpetre, double refd granular 450-500 lb bbls...lb.	...	.06	...	.06	.05¾	.06¾
Satin, White, 550 lb bbls..lb.	...	.01½	...	.01½	...	.01½

* Higher price is for lcl quantities.
† Plus discounts, based on time of purchase and delivery.

Current

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Shellac Bone dry bbls†...lb.	.32	.26	.37	.18	.28
Garnet, bags† .....lb.	.26	.24	.31	.15	.20
Superfine, bags‡ .....lb.	.28	.23	.31	.09½	.18¾
T. N. bags‡ .....lb.	.26	...	...	...	..
Schaeffer's Salt kegs.....lb.	.48	.48	.50	.48	.50
Silica, Crude, bulk mines.ton	8.00	8.00	11.00	8.00	11.00
Refined, floated bags...ton	22.00	22.00	30.00	22.00	30.00
Air floated bags.....ton	...	...	32.00	...	32.00
Extra floated bags...ton	30.00	30.00	35.00	30.00	35.00
Silver Nitrate, vials.....oz.	...	.31⅞	.35½	...	...
Soda Ash, 58% dense, bags c-l wks.....100 lb.	...	...	1.25	1.17½	1.25
58% light, bags....100 lb.	...	...	1.25	1.17½	1.23
Soda Caustic, 76% grnd & flake drums.....100 lb.	...	...	3.00	2.90	3.00
76% solid drs.....100 lb.	...	...	2.60	2.50	2.60
Liquid sellers tanks, 100 lbs.	...	...	2.25	2.15	2.25
Sodium Abietate, drs.....lb.	...	.03	.08	...	.03
Acetate, tech 450 lb. bbls wks .....lb.	.04½	.04½	.05	.04¼	.05
Alignate, drs. .....lb.	...	.50	.64	...	.50
Aresenate, drums.....lb.	.07¾	.07¾	.08¾	.07¾	.08¾
Arsenite, drums.....gal.	.40	.40	.75	.05	.75
Benzoate U.S.P., kegs..lb.	.45	.45	.47	...	...
Bicarb, 400 lb bbl...100 lb.	...	...	2.25	...	2.25
Bichromate, 500 lb cks wks. .....lb.	.06⅛	.06⅛	.06⅝	.044	.07
Bisulfite, 500 lb bbl wks.lb.	.03¼	.03	.036	.02¾	.0335
Chlorate, wks.....lb.	.06¼	.06¼	.07½	.05¾	.07¾
Chloride, technical.....ton	13.60	11.40	16.50	11.40	14.00
Cyanide, 96-98%, 100 & 250 lb. drums wks.....lb.	.15½	.15½	.16½	.15½	.16
Fluoride, 300 lb bbls wks .....lb.	.07½	.07½	.09½	.07	.07½
Hydrosulfite, 200 lb bbls f.o.b wks.....lb.	.19½	.19½	.21	.20	.21
Hypochloride solution, 100 lb. cbys. .....lb.	...	...	.05	...	.05
Hyposulfite, tech, pea crys 375 lb bbls wks..100lb.	2.40	2.40	3.00	2.40	3.00
Technical, regular cryst. 375 lb bbls wks.100 lb.	2.40	2.40	2.65	2.40	2.65
Iodide .....lb.	...	2.40	3.50	3.10	3.50
Metanilate, 150 lb bbls..lb.	.41	.41	.42	.44	.45
Metasilicate, c-l, wks.100 lb.	2.65	2.65	3.05	2.65	3.25
Monohydrate, bbls.....lb.	...	...	.02½	...	.02½
Napthenate .....lb.	...	...	.13	...	...
Naphthionate, 300 lb bbl.lb.	.52	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb. bags c-l NY.....ton	...	24.80	26.30	1.26z	1.31½z
100 lb. bags .....ton	...	25.50	27.00	...	...
Bulk .....ton	...	23.50	24.50	...	...
Nitrite, 500 lb bbls spot.lb.	.07¼	.07¼	.08	.07¼	.08
Orthochlorotoluene, sulfonate, 175 lb bbls wks.lb.	.25	.25	.27	.25	.27
Perborate, 275 lb bbls..lb.	.18	.18	.19	.17	.19
Peroxide, bbls. 400 lb...lb.	...	...	.17	...	...
Phosphate, di-sodium, tech. 310 lb bbls.....100 lb.	...	2.10	2.40	2.00	2.40
tri-sodium, tech, 325 lb bbls. .....100 lb.	...	2.60	2.70	2.15	2.50
Picramate, 160 lb kegs..lb.	.69	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl. wks.....lb.	.11½	.11½	.12	.11½	.12
Pyrophosphate, 100 lb kg.lb.	.16½	.16½	.18	.15	.20
Silicate, 60 deg 55 gal drs, wks. .....100 lb.	1.65	1.65	1.70	1.65	1.70
40 deg 35 gal drs, wks .....100 lb.	...	...	.80*	.75	.80
Silicofluoride, 450 lb bbls NY .....lb.	.05	.04¾	.06	.04½	.06
Stannate, 100 lb. drums.lb.	.33½	.33½	.37½	.18	.37
Stearate, bbls.....lb.	.20	.20	.25	.20	.25
Sulfanilate, 400 lb. bbls..lb.	.16	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-l wks.....lb.	.022	.022	.0285	.02	.0285
Sulfide, 80% crystals, 440 lb bbls wks.....lb.	...	.02¼	.02½	.02½	.02¾
62% solid, 650 lb drums c-l wks.....lb.	...	...	.03	...	.03
Sulfite, crystals, 400 lb bbls wks .....lb.	.02¼	.02¼	.02½	.03	.03¼
Sulfocyanide, bbls.....lb.	.28	.28	.35	.28	.35
Tungstate, tech, crystals, kegs .....lb.	.83	.70	.88	.57	.67
Spermaceti, blocks, cases..lb.	...	.18	.20	.17	.22
Cakes, cases .....lb.	...	.19	.21	.18	.23
Spruce Extract, ord., tks..lb.	...	...	.01	.00⅞	.01
Ordinary, bbls.....lb.	...	.01½	.01½	.01¼	.01½
Super spruce ext, tks....lb.	...	.01⅜	.01⅜	.01¼	.01⅝
Super spruce ext., bbls..lb.	...	.01⅞	.01⅞	.01⅝	.01⅞
Super spruce ext, powd., bags .....lb.	...	.04	.04	...	.04
Starch, powd, 140 lb bags ..... 100 lb.	3.56	3.76	3.76	2.29	3.01
Pearl, 140 lb bags...100 lb.	3.46	3.66	3.66	2.19	2.91
Potato, 200 lb bags.....lb.	.05¼	.06	.05¼	.06	.03¾ .06
Imported bags .....lb.	.06	.06½	.06	.06½	.04¾ .06½
Starch, Potato Soluble....lb.	.08	.08½	.08	.08½	.08 .08½
Rice, 200 lb bbls.....lb.	.07½	.08½	.07½	.08½	.07 .08½
Wheat, thick bags.....lb.	.06¼	.06¾	.06¼	.06¾	.05¾ .06¾
Thin bags.....lb. .10		.10¼	.10	.10¼	.09½ .10¼
Strontium carbonate, 600 lb. bbls wks.....lb.	.07¼	.07¼	.07½	.07¼	.07¼ .07½
Nitrate, 600 lb bbls NY..lb.	.10½	.10½	.11	.07	.11
Peroxide, 100 lb drs....lb.	...	...	1.25	...	1.25
Sulfur Brimstone, bkn. rock, 250 lb bag c-l....100 lb.	...	...	2.05	...	2.05

* Tanks, 15c less; † Bone dry and refined shellac prices at Chicago, 1c higher; Boston, ½c; Pacific Coast, 3c; Philadelphia deliveries, fob, N. Y. City. ‡ T. N. and superfine prices quoted fob, N. Y. City and Boston; Chicago prices, 1c higher; Philadelphia deliveries, fob, N. Y. City. z Price per 100 lbs.

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HOOKER ELECTROCHEMICAL COMPANY

60 EAST 42nd STREET NEW YORK

Sulfur Brimstone
Zinc Cyanide

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Sulfur	...	.27	.20	.29	.08½	.17¾
Crude, f.o.b. mines....ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour for dusting 99½%, 100 lb bgs c-l NY 100 lb.	...	2.40	...	2.40	...	2.40
Heavy bags c-l...100 lb.	...	2.50	...	2.50	...	2.50
Flowers, 100%, 155 lb bbls c-l NY.....100 lb.	...	3.45	...	3.45	...	3.45
Roll, bbls l-c-l NY..100 lb.	2.65	2.85	2.65	2.85	2.65	2.85
Sulfur Chloride, red, 700 lb drs wks.....lb.	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb. drs wks..lb.	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl.lb.	.07	.08	.07	.08	.07	.08
Extra, dry, 100 lb cyl..lb.	.11	.13	.11	.13	.10	.13
Sulfuryl Chloride.....lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, ground..ton	...	71.00	69.00	75.00	50.00	75.00
Talc, Crude, 100 lb bags NY .....ton	12.00	15.00	12.00	15.00	12.00	15.00
Refined, 100 lb bags NY .....ton	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bags NY.ton	27.50	30.00	27.50	30.00	18.00	30.00
Refined, white, bags ..ton	45.00	60.00	45.00	60.00	35.00	60.00
Italian, 220 lb bags to arr. .....ton	70.00	75.00	70.00	75.00	48.50	75.00
Refined, white bags NY .....ton	75.00	80.00	75.00	80.00	50.00	80.00
Superphosphate, 16% bulk, wks .....ton	...	8.50	8.00	8.50	6.50	8.00
Run of pile.....ton	...	8.00	7.50	8.00	6.00	7.50
Tankage Ground NY...unit	...	3.00*	2.50	3.00*	1.70	2.75*
Unground .....unit	...	2.60*	2.00*	2.60*	2.35*	2.60*
Fert. grade f.o.b. Chicago .....unit	...	1.55*	1.80	2.40*	1.40	3.00
South American cif...unit	...	2.85*	2.75	3.10*	...	2.50
Tapioca Flour, high grade bgs. .....lb.	.03	.05	.03	.05	.03	.05
Medium grade, bgs.. lb.	.03	.04	.03	.04	.03	.04
Tar Acid Oil, 15%, drs..gal.	.21	.22	.21	.22	.20	.22
25% drums.....gal.	.23	.24	.23	.24	.22	.24
Tartar Emetic, Tech.....gal.	...	.22¾	.23	.23	...	...
U. S. P. .....gal.	.28	.28½	.27	.28½	...	...
Terra Alba Amer. No. 1, bgs or bbls mills...100 lb.	1.15	1.75	1.15	1.75	1.15	1.75
No. 2 bgs or bbls..100 lb.	1.00	1.25	1.00	1.25	1.00	1.25
Imported bags.....lb.	.01⅛	.01¼	.01⅛	.01¼	.01⅛	.01¼
Tetrachlorethane, 50 gal drlb.	.08½	.09	.08½	.09	.08½	.09
Tetralene, 50 gal drs wks ..lb.	.12	.13	.12	.13	.12	.13
Thiocarbanilid, 170 lb bbl.lb.	.20	.25	.20	.25	.25	.28½
Tin						
Crystals, 500 lb bbls wks lb.	.38	.38½	.30	.40½	.24	.41
Metal Straights NY....lb.	...	.51⅛	.50⅞	.55⅜	.23	.57
Oxide, 300 lb bbls wks.lb	.56	.58	.55	.60	.27½	.59
Tetrachloride, 100 lb drs wks .....lb.	.26	.26½	.25½	.28½	.26	.28
Titanium Dioxide 300 lb. bbl. .....lb.	.17¼	.19¼	.17¼	.19¼	.17¼	.19¼
Calcium Pigment, bbls...lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Toluene, 110 gal drs.....gal.	...	.35	...	.35	...	.35
8000 gal tk cars wks..gal.	...	.30	...	.30	...	.30
Toluidine, 350 lb bbls....lb.	.88	.89	.88	.89	.88	.89
Mixed, 900 lb drs wks..lb.	.27	.28	.27	.28	.27	.28
Toner Lithol, red, bbls...lb.	.75	.80	.75	.85	.80	.95
Para, red, bbls.....lb.	...	.75	.75	.80	...	.80
Toluidine .....lb.	...	1.35	...	1.35	1.35	1.55
Triacetin, 50 gal drs wks.lb.	.32	.36	.32	.36	.32	.36
Triamyl Borate, drs, wks.lb.	...	.40	...	.40	...	...
Triamylamine, drs, wks..lb.	...	1.00	...	1.00	...	...
Trichlorethylene, 50 gal dr.lb.	.09½	.10	.09½	.10	.09½	.10
Triethanolamine, 50 gal drs .....lb.	.35	.38	.35	.38	.35	.38
Tricresyl Phosphate, drs..lb.	.19	.26	.19	.26	.19	.26
Triphenyl guanidine.....lb.	.58	.60	.58	.60	.58	.60
Phosphate, drums.....lb.	.37	.39	.37	.39	.37	.39
Tripoli, 500 lb bbls..100 lb.	.75	2.00	.75	2.00	.75	2.00
Tungsten, Wolframite..... .....per unit	15.00	15.25	12.00	15.25	10.00	12.50
Turpentine carlots, N Y dock bbls .....gal.	...	.46½	.46½	.63½	.46¼	.51½
Savannah, bbls .....gal.	...	.41½	.41½	.58½	...	...
Jacksonville, bbls ....gal.	...	.41½	.41½	.58½	...	...
Wood Steam dist, bbls, c-l N. Y. .....gal.	...	.41	.41	.61	.42	.48
Urea, pure, 112 lb cases...lb.	.15½	.17	.15	.17	.15	.17
Fert. grade, bags c.i.f..ton	100.00	120.00	90.00	120.00	82.60	90.00
c.i.f. S. points.....ton	100.00	120.00	90.00	120.00	82.60	90.00
Urea Ammonia liq 55% NH_3, tanks .....unit	...	.96	...	.96	...	...
Valonia beard, 42%, tannin bags .....ton	...	39.50	39.00	40.00	27.50	42.00
Cups, 32% tannin.....ton	...	26.00	23.00	27.00	17.00	25.00
Mixture, bark, bags...ton	...	28.00	...	28.00	22.00	28.00
Vermillion, English, kegs.lb.	1.59	1.70	1.41	1.73	1.05	1.42
Vinyl Chloride, 16 lb cyl.lb.	...	1.00	...	1.00	...	1.00
Wattle Bark, bags.....ton	...	29.50	29.50	34.00	24.00	32.00
Extract 55%, tks, bbls.lb.	...	.03¾	.03⅝	.03⅞	.03	.03⅞
Whiting, 200 lb bags, c-l wks .....100 lb.	.85	1.00	.85	1.00	.85	1.00
Alba, bags c-l NY....ton	...	15.00	...	15.00	13.00	15.00
Gliders, bags c-l NY.100 lb.	...	1.35	...	1.35	...	1.35
Wood Flour, c-l.....bags	18.00†	30.00	18.00†	30.00	18.00	36.00
Xylene, 10 deg tks wks.gal.	...	.29	...	.29	.29	.29
Commercial, tks wks..gal.	...	.26	...	.26	...	.26
Xylidine, crude.....lb.	.36	.37	.36	.37	.36	.37
Zinc Ammonium Chloride powd., 400 lb bbls...lb.	.04¾	.05	.04¾	.05	.04¾	.05
Carbonate Tech., bbls NY .....lb.	.09½	.11	.09½	.11	.09½	.11
Chloride Fused, 600 lb drs wks. .....lb.	.04¼	.05	.04¼	.05	.05	.05¾
Gran, 500 lb bbls wks..lb.	...	.05⅛	.05⅛	.06	.05¾	.06
Soln 50%, tks wks..100 lb.	...	2.00	...	2.00	...	3.00
Cyanide, 100 lb drums..lb.	.36	.41	.36	.41	.38	.39

* &10. † Depends upon grade.

Current Zinc Dust Whale Oil

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Zinc Dust, 500 lb bbls c-l wks lb.	...	.06¼	.06¼	.071	.04¾ .07½
Metal, high grade slabs c-l N Y 100 lb.	...	4.60	4.60	4.87½	3.02 5.37
Oxide, Amer., bags wks. lb.	.05¼	.06¼	.05¾	.06¼	.05 .06
French, 300lb bbls wks. lb.	.05¾	.11⅛	.05¾	.11⅛	.05¾ .11⅛
Palmitate, bbls. lb.	.21	.22	.20	.22	.17½ .21
Perborate, 100 lb drs. lb.	...	1.25	...	1.25	... 1.25
Peroxide, 100 lb drs. lb.	...	1.25	...	1.25	... 1.25
Resinate, fused, dark, bbls. lb.	.05¾	.06½	.05¾	.06½	.05¾ .06½
Stearate, 50 lb bbls. lb.	.18	.21	.18	.21	.15 .19
Sulfate, crystals, 400 lb bbl wks lb.	.028	.033	.02¾	.033	.03 .03½
Flake, bbls lb.	.032	.037	...	...	... ...
Sulfide, 500 lb bbls. lb.	.13	.13½	.13	.13½	.12 .13½
Sulfocarbolate, 100 lb keg. lb.	.21	.22	.21	.22	.21 .22
Zirconium Oxide, Nat. kegs. lb.	.02½	.03	.02½	.03	.02½ .03
Pure kegs lb.	.45	.50	.45	.50	.45 .50
Semi-refined kegs lb.	.08	.10	.08	.10	.08 .10
Oils and Fats					
Castor, No. 1, 400 lb bbls. lb.	...	.09¾	...	.09¾	.09¼ .10
No. 3, 400 lb bbls. lb.	...	.09¾	...	.09¾	.08½ .09¾
Blown, 400 lb bbls. lb.	.11½	.12¼	.11½	.12¾	.11¼ .12¾
China Wood, bbls spot NY. lb.	.098	.099	.07½	.099	.04⅞ .09⅛
Tanks, spot NY. lb.	.093	.094	.07¼	.094	.04¼ .08½
Coast, tanks lb.	.092	.094	.06⅞	.094	.04⅛ .08⅛
Coconut, edible, bbls NY. lb.	...	.04¾	.04¾	.10¾	... .10¾
Manila, bbls NY. lb.	...	.03¾	.03¾	.04	.03⅞ .04¾
Tanks, N Y lb.	...	.02½	.02⅝	.03	.02¾ .03¾
Tanks, Pacific Coast. lb.	...	.02¼	.02¼	.02⅞	.02½ .03⅜
Cod, Newfoundland, 50 gal. bbls. gal.	.40	Nom.	.34	.40	.19 .35
Copra, bags, N Y. lb.	...	.0140	.012	.016	.0152½.019
Corn, crude, bbls NY. lb.	.07¼	.07⅜	.04⅝	.07⅜	.04⅝ .07¾
Tanks, mills lb.	.06⅛	.06⅜	.03½	.06⅜	.02⅞ .06½
Refined, 375 lb bbls NY. lb.	.08¼	.08⅜	.05¾	.08⅜	.05¾ .08¾
Degras, American, 50 gal bbls NY lb.	...	.03	.02¾	.03	.02½ .03
English, brown, bbls NY. lb.	.04¼	.04½	.03¾	.04	.02⅞ .04
Greases,					
Yellow lb.	.04⅛	.04¼	.02⅜	.04¾	.01¾ .03⅝
White, choice bbls NY. lb.	.04¼	.05⅛	.02¾	.05⅛	.02½ .04⅝
Herring, Coast, tanks. gal.	.17	Nom.	.15	.15	.11 .23
Lard Oil, edible, prime. lb.	...	.09¾	...	.09¾	.08½ .10½
Extra, bbls lb.	...	.08	.07	.08	.07½ .08¼
Extra No. 1, bbls. lb.	...	.07¾	.06⅜	.07¾	.06 .08
Linseed, Raw, less than 5 bbl. lots lb.	...	.103	.101	.105	.08 .12
Bbls. c-l spot lb.	...	.099	.093	.101	.072 .11
Tanks lb.	...	.093	.087	.095	.066 .104
Menhaden, Tanks, Baltimore gal.	...	.20	.15	.20	.09 .15
Refined, alkali bbl. lb.	.059	.063	.057	.069	... ...
Tanks lb.	...	.053	.051	.061	... ...
Light Pressed, bbls. lb.	.053	.057	.051	.057	... ...
Tanks lb.	...	.047	.045	.049	... ...
Neatsfoot, CT, 20° bbls NY. lb.	...	.16½	...	.16½	.11¾ .16¾
Extra, bbls NY lb.	...	.08	.07	.08	.06½ .08¼
Pure, bbls NY lb.	...	.12	.12	.13	.07¾ .14
Oleo, No. 1, bbls NY. lb.	...	.08¼	.06	.08¼	.05 .06⅞
No. 2, bbls NY. lb.	...	.07¾	.05⅜	.07¾	.04¼ .06⅜
Olive, denat, bbls NY. gal.	...	.86	.76	.90	.47 .80
Edible, bbls NY gal.	1.75	1.90	1.60	1.90	1.30 1.85
Foots, bbls NY lb.	...	.07	.06½	.07⅜	.04⅜ .06¾
Palm, Kernel, casks. lb.	.02½	Nom.	.02½	.04¼	.04 .04¾
Lagos, 1500 lb casks. lb.	...	.03⅞	.03⅝	.03⅞	.02⅝ .04¾
Niger, casks lb.	.03	.03⅛	.03¼	.03¾	.024 .04½
Peanut, crude, bbls NY. lb.	...	.08¼	.06½	.08¼	.03⅛ .07
Refined, bbls NY. lb.	...	.10	.07½	.10½	.07½ .11
Perilla, bbls NY lb.	.09	.09¼	.08½	.09⅝	.05 .10½
Tanks, Coast lb.	...	.08¾	.07½	.09	.03¾ .09¾
Poppyseed, bbls NY. gal.	1.50	1.60	1.45	1.60	1.45 1.70
Rapeseed, blown, bbls NY. gal.	.08	.082	.08	.082	... ...
Denatured, drms, NY. gal.	...	.40	.37	.44	.34 .65
Red, Distilled, bbls. lb.	.07⅜	.08⅜	.06⅞	.08⅜	.05⅞ .07⅝
Tanks lb.	...	.06½	.06	.06½	.05 .06
Salmon, Coast, 8000 gal tks gal.	.17	Nom.	.15	.17	.11 .18
Sardine, Pac. Coast tks. gal.	...	.25	.13	.25	.09½ .20
Sesame, edible, yellow, dom. lb.	.11	.11¼	.07½	.13¼	.08½ .10
White, dos. lb.	.11	.11¼	.08	.13¼	.10 .11
Soy Bean, crude					
Pacific Coast lb.	...	Nom.	...	Nom.	.032 .035
Domestic tanks, f.o.b. mills lb.	...	.06½	.06	.06½	.027 .085
Crude, bbls NY lb.	.071	.075	.066	.071	.04 .095
Refined, bbls NY lb.	.076	.087	.071	.087	.04½ .106
Sperm, 38° CT, bleached, bbls N Y lb.	.108	.11	.108	.11	... ...
45° CT, bleached, bbls NY lb.	.101	.103	.101	.103	... ...
Stearic Acid, double pressed dist bags lb.	.09	.10	.09	.10	.07½ .10
Double pressed saponified bags lb.	.09	.10	.09	.10	.08 .10
Triple pressed dist bags. lb.	.11¾	.12¾	.11¾	.12¾	.10¼ .12¾
Stearine, Oleo, bbls lb.	...	.07¼	.05	.07¼	.03½ .06¾
Tallow City, extra loose. lb.	.04⅜	.04⅝	.02⅞	.04⅝	.02 .03⅞
Edible, tierces lb.	...	.05¼	.04¾	.05¼	.03½ .05⅛
Tallow Oil, bbls, c-l NY. lb.	.05¾	.06	.05¾	.06	.05¾ .06
Acidless, tanks NY. lb.	...	.07	.06	.07	.05 .07
Vegetable, Coast mats lb.	.07¼	Nom.	.06	.07¼	.04¼ .06
Turkey Red, single, bbls. lb.	.07½	...	.07½	...	.06¼ .07½
Double, bbls lb.	.12½	.13	.12½	.13	.08 .13
Whale					
Winter bleach, bbls NY. lb.	...	.072	...	.072	... ...
Refined, nat, bbls, NY. lb.	.068	.07	.068	.07	... ...

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"We"—Editorially Speaking

A curious chemist writes us: "Just what is the big idea of the Arrow Collar boy in a tin hat with wings who graces the cover of THE CHEMICAL GUIDE-BOOK and the top of your editorial page?"

Our colophon (publisher's trade mark to you) is a benzene ring enclosing a silhouette of Mercury, the god of commerce. A rather nice symbolism for the chemical industry, isn't it? We thought so ourselves till a hardboiled chemical sales executive (who reads the Greek poets in the original instead of going to the movies) pointed out that Mercury is also the god of thieves. Now we're not so sure; but we cannot think up anything better. Has anybody a good suggestion?

Sir Harry McGowan's talk on research was made on the occasion of the presentation to him of the seventh Messel Memorial Medal by the Society of Chemical Industry. This medal is awarded by the Society every two years in commemoration of one of its most distinguished members.

From Frank C. Whitmore, Dean of School of Chemistry and Physics, Pennsylvania State College: "Once again congratulations on your editorial. The urge for the industry to do something on the pharmacology of its products is most timely. The discovery of harmful or beneficial effects of chemical materials is too likely to lag far behind the discovery of the materials themselves or their commercial production. As you say, we need the facts. In this case there should be an abundant incentive for getting busy and determining them. The work should be financed and controlled by the industries rather than turned over to government handling and control. The reasons are obvious."

As one of his colorful predecessors in the office of the Mayor of New York once said, Mr. La Guardia "said a mouthful" when, in his Labor Day speech, he declared both the Law of Supply and Demand and the Constitution of the United States are obsolete.

It begins to look as if next summer some of our enterprising seaside resorts, instead of staging a bathing beauty contest, would get a big entry of modern Canutes who believe that they can command the incoming tides to stop.

From the plant manager of one of the new potash companies: "The July issue of CHEMICAL INDUSTRIES made mighty interesting reading for me. The personal mention is most flattering, and "unaccustomed as I am," I do not know the proper sort of words to use to express my emotions. The whole series of articles, telling about the trip through the South and Southwest has been a real feature. I do not recollect anything similar, in a technical journal. The comparison can be made with the work of a war-correspondent who is on the job when the bullets are flying." Although we can appreciate how the vivid simile of the war correspondent in the midst of flying bullets rises naturally enough to the mind of any man in the potash business today, nevertheless we are certain that the dangers of chemical reporting are grossly exaggerated by Mr. Cramer, for Mr. Haynes assures us that he was not once "bored."

Add to our own "I-told-you-so-Department": "Throughout all American life the tendency is notable for thrusting responsibility downward. Anciently power of any kind carried with it responsibility for the acts of assistants and subordinates. Today, everyone finds some unimportant underling who can be made the scapegoat of mistakes and misdoings. The Satrap of a Persian province, whose tax collectors appropriated imperial funds, did not live long enough to investigate his department. The mayor of an American city where graft is rampant discharges an assistant clerk in the comptroller's office and reduces a couple of police sergeants to the ranks, then runs for re-election as a reformer. We have the same habit in industrial corporations. This question of corporation control is bound to receive a great deal of attention during the next few years. That the major executive should be held responsible for the acts of subordinates and the results in his department is rapidly growing in favor. In many companies this would be a revolution quite comparable to any of the New Deal activities." Editorial from our issue of September, 1933.

"I note that your competitor the 'Old Paint and Drug Reporter'" writes George Stanley Robins, chemical merchant prince of the Saint Louis territory, "apparently swiped our idea of trade names and brand names." Yes, we noticed it, and we've been long since fed up with this kind of flattery.

Chaplin Tyler, of du Pont, wants to know what a "petitie blonde" is, and we hasten to assure him that it is not a new organic compound but a typographical error in French, which we admit is pretty frivolous for a staid business magazine.

Following his trip to the new chemical developments in the South, a visit to the plants centering about Charleston, W. Va., was the logical—almost obligatory— sequence for our own Chemical Tourist. Here is the earliest, largest chemical center below the Mason and Dixon Line, a fair rival of Niagara Falls, a most important and highly varied group of chemical operations. From the New River Gorge to the chemical city, Nitro, Mr. Haynes spent a week visiting all the important plants— not excluding the Carbide & Carbon operations to which he was the first chemical journalist ever admitted—talking with the operating executives, the chemists, and the engineers on the firing line.

Fifteen Years Ago

From our issues of September, 1919

Article in Drug & Chemical Markets, September 17th, discusses pressing problem of finding an even balance between rising production costs and increasing labor unrest.

War Department sells 30 million pounds phenol to Monsanto.

U. S. I. and U. S. Chemical Co. (subsidiary U. S. I.) award contract for erection of plant to manufacture alcogas, a substitute for gasoline as a motor fuel.

National Exposition of Chemical Industries opens in Chicago with 400 exhibitors.

Mathieson Alkali announces new process for extracting nitrogen from air by means of which ten tons of ammonia can be manufactured daily. Plant being completed for operation of process.